

*ADAPTATION OF JAPANESE MANAGEMENT PRACTICES
TO INDIAN ORGANISATIONS : SOME STUDIES*

THESIS

Submitted in partial fulfilment
of the requirements for the degree of
DOCTOR OF PHILOSOPHY

By

KRISHNAMURTHY IYER

Under the Supervision of
Prof. R.P. MOHANTY, B.Sc. Engg. (Mech.), M.Tech (IE & OR)
P.G. Dip. (G.M.), Ph.D., FIIE

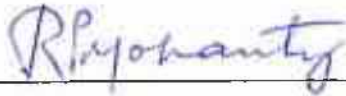
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PILANI (RAJASTHAN)

CERTIFICATE

This is to certify that the thesis entitled "Adaptation of Japanese Management Practices to Indian Organisations : Some Studies" and submitted by Krishnamurthy Iyer I.D. No. 93 PHXF401 for award of Ph.D. Degree of the Institute, embodies original work done by him under my supervision.

*Signature in full of
the Supervisor*

: 

Name

: Prof. R.P. Mohanty

Designation

: Vice President
Human Resources Division
The Associated Cement Companies Ltd.
Mumbai-400 020.

Date

: 31st January, 1998

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TABLE OF CONTENTS

CHAPTER I

INTRODUCTION

1.1	WHY JAPANESE MANAGEMENT ?	1
1.2	SIGNIFICANCE OF THIS RESEARCH	2
1.3	OBJECTIVES	3
1.4	ORGANISATION OF THE THESIS	3
1.5	CONCLUDING REMARKS	4

CHAPTER II

EVOLUTION AND CHARACTERISTIC FEATURES OF JAPANESE MANAGEMENT PRACTICES

2.1	INTRODUCTION	5
2.2	OBJECTIVE	5
2.3	EVOLUTION	5
2.3.1.	Pre World War - II	
2.3.2.	Post World War II	
2.3.3.	Understanding the Transition	
2.4	CHARACTERISTIC FEATURES OF JAPANESE MANAGEMENT PRACTICES	7
2.4.1	Proactivity :	
2.4.2	Creating clean, orderly workplace :	
2.4.3	Minimal Inventory :	
2.4.4	Perseverance :	
2.4.5	Thinking quality in :	
2.4.6	Personnel Management Issues :	
2.4.7	Some significant remarks :	
2.4.8	Macro level concerns :	
2.5	CONCLUDING REMARKS	11

CHAPTER III

MANAGEMENT PRACTICES - MADE IN JAPAN

3.1	INTRODUCTION	12
3.2	VALUE ADDING MANAGEMENT (VAM)	12
3.2.1.	What is it ?	
3.2.2	Characteristic Features :	
3.2.3.	Benefits	
3.3	5'S JAPANESE OR 6'S AMERICAN	14
3.3.1	What is it ?	
3.3.2.	Characteristic features of 5'S (6'S)	
3.3.3	Methodology	
3.3.4	Benefits	
3.4	POKA-YOKE	16
3.4.1	What is it ?	

3.4.2	Significant Features	
3.4.3	Types of Poka-Yoke systems	
3.4.4	Benefits	
3.4.5	Conclusion	
3.5	JUST IN TIME (JIT)	18
3.5.1	What is it ?	
3.5.2	Significant Features	
3.5.3	Benefits	
3.5.4	Conclusion	
3.6	CAUSE AND EFFECT DIAGRAM WITH THE ADDITION OF CARDS (CEDAC)	20
3.6.1	What is it ?	
3.6.3	Significant Features	
3.6.4	Benefits	
3.6.5	Conclusion	
3.7	KAIZEN	23
3.7.1	What is it ?	
3.7.2	Characteristic Features	
3.7.3	Benefits	
3.7.4	Conclusion	
3.8	SINGLE MINUTE EXCHANGE OF DIES (SMED)	26
3.8.1	What is it ?	
3.8.2	Characteristic Features	
3.8.3	Benefits	
3.8.4	Conclusion	
3.9	TOTAL PRODUCTIVE MAINTENANCE (TPM)	28
3.9.1	What is it ?	
3.9.2	Implementation aspects	
3.9.3	Benefits	
3.9.4	Conclusion	
3.10	CONCLUDING REMARKS	30

CHAPTER IV

A REVIEW OF APPLICATION OF JAPANESE MANAGEMENT PRACTICES TO DIFFERENT INTERNATIONAL SETTINGS

4.1	INTRODUCTION	31
4.2	A NOTE ON THE JAPANESE INSTITUTIONAL ENVIRONMENT	32
4.3	AUSTRALIA	33
4.3.1	Introduction	
4.3.2	Some Key Features of Australian Adaptation	
4.3.3	Conclusion	
4.4	MALAYSIA	36
4.4.1	Introduction	
4.4.2	Some Key Features of Malaysian Adaptation	
4.4.3	Implications	

4.4.4	Conclusion	
4.5	BRAZIL	38
4.5.1	Introduction	
4.5.2	Some Key Features of Brazilian Adaptation	
4.5.3	Conclusion	
4.6	U.S.A.	39
4.6.1	Introduction	
4.6.2	Behavioural aspects of American Managers	
4.6.3	Specific Japanese transplants in the autos and the electronics sectors	
4.6.4	Some Key Features of American Adaptation	
4.6.5	A contrast between an American manager's and Japanese manager's style of functioning	
4.6.6	Implications	
4.6.7	Conclusion	
4.7	U.K.	45
4.7.1	Introduction	
4.7.2	Some Key Features of U.K. Adaptation	
4.7.3	Implications	
4.7.4	A Note on 'Japanisation' in the U.K.	
4.7.5	Conclusion	
4.8	NEW SOUTH WALES	49
4.8.1	Introduction	
4.8.2	Some Key Features of New South Wales Adaptation	
4.8.3	Implications	
4.8.4	Conclusion	
4.9	CONCLUDING REMARKS	50

CHAPTER V

AN ASSESSMENT OF APPLICATIONS OF JAPANESE MANAGEMENT PRACTICES TO SOME PIONEERING INDIAN MANUFACTURING ENTERPRISES

5.1	INTRODUCTION	52
5.2	LUCAS - TVS	52
5.2.1	Corporate Background	
5.2.2	Significant features of transition	
5.2.3	Key features of JMPs adaptation	
5.2.4	Results achieved	
5.2.5	Conclusion	
5.3	TRACTOR AND FARM EQUIPMENTS LIMITED (TAFE)	58
5.3.1	Corporate Background	
5.3.2	Significant Features of Transition	
5.3.3	Key Features Of JMPs Adaptation	
5.3.4	Results achieved	
5.3.5	Conclusion	
5.4	MODI XEROX	62
5.4.1	Corporate Background	

5.4.2	Significant features of transition	
5.4.3	Key features of JMPs adaptation	
5.4.4	Results achieved	
5.4.5	Conclusion	
5.5	ESCORTS LIMITED	64
5.5.1	Corporate Background	
5.5.2	Significant Features of Transition	
5.5.3	Key features of JMPs adaptation	
5.5.4	Results achieved	
5.5.5	Conclusion	
5.6	J.K. JUTE MILLS	65
5.6.1	Corporate Background	
5.6.2	Significant Features Of Transition	
5.6.3	Key features of JMPs adaptation	
5.6.4	Results achieved	
5.6.5	Conclusion	
5.7	CONCLUDING REMARKS	68

CHAPTER VI

EXPLORATORY SURVEY RESULTS ON ADAPTATION OF JMPs IN SOME LEADING INDIAN ORGANISATIONS

6.1	INTRODUCTION	69
6.2	OBJECTIVES	69
6.3	METHODOLOGY	69
6.4	ANALYSIS	71
6.5	GRAPHIC DEPICTION OF CERTAIN KEY ISSUE BASED CLUSTERS	73
6.6	IMPLICATIONS OF THIS RESEARCH	80
6.7	CONCLUDING REMARKS	80

CHAPTER VII

EXPERIENTIAL LEARNINGS THROUGH ACTION RESEARCH PROJECTS UNDERTAKEN IN CGL

7.1	INTRODUCTION	81
7.2	ACTION RESEARCH PROJECTS TAKEN	82
7.3	WHY ACTION RESEARCH ?	83
7.4	LOCATION	83
7.4.1	Corporate profile of CGL	
7.4.2	Profile of Fans and Appliances division	
7.4.3	Industrial relations in CGL	
7.5	PROJECT I - TO ARREST DECLINING PROFITABILITY	85
7.5.1	Problem	
7.5.2	Organisation	
7.5.3	Strategies Adapted	
7.5.4	Results and Discussion	

7.5.5	Derivatives	
7.6	ACTION RESEARCH TWO - TO CREATE A SENSE OF BELONGINGNESS IN THE WORKFORCE	90
7.6.1	Problem	
7.6.2	Organisation	
7.6.3	Strategies Adopted	
7.6.4	Results and Discussions	
7.6.5	Derivatives	
7.7	ACTION RESEARCH THREE - TO VENTURE INTO MANAGING EXCELLENCE AS A WAY OF LIFE.	94
7.7.1	Problem :	
7.7.2	Organisation	
7.7.3	Strategies Adopted	
7.7.4	Results and Discussions :	
7.7.5	Derivatives	
7.8	MULTIPLIER EFFECTS OF THE FOREGOING ACTION RESEARCH PROJECTS	98
7.9	CONCLUDING REMARKS	102

CHAPTER VIII

EXAMPLES OF ADAPTATION OF JAPANESE MANAGEMENT PRACTICES IN CROMPTON GREAVES LIMITED

8.1	INTRODUCTION	103
8.2	OBJECTIVES	103
8.2.1	To highlight cases wherein some of the JMPs discussed earlier have been successfully implemented.	
8.2.2	To review the before and after picture in order to understand the benefits gained therefrom.	
8.2.3	To formulate certain sequential steps, if possible, a pattern of implementation.	
8.2.4	To cover as much breadth as possible in the types of JMPs available.	
8.2.5	To look at barriers during implementation, if any.	
8.3	STRATEGIES ADOPTED	103
8.3.1	Creating the organisation :	
8.3.2	Extensive training and awareness :	
8.3.3	Salient features of training programme :	
8.4	ACTUAL IMPLEMENTATION OF SPF ON SHOP FLOOR	106
8.4.1	Case Study No. 1 - Location : Fans and Appliances Divn., Kanjur Application of VAM techniques in Table Fan Machine Shop	
8.4.2	Case Study No. 2 - Location : Fans and Appliances Divn., Kanjur. Application of VAM techniques in Winding Shop	
8.4.3	Case Study No. 3 - Location : Motors Division, Worli. Reduction of test bed rejection using CEDAC technique	
8.4.4	Case Study No. 4 - Location : Medium Range Motors Division, Ahmednagar 6'S for Gauge Storage	

8.4.5	Case Study No. 5 - Location : Pumps Division, Worli. WIP Reduction using Kanban	
8.4.6	Case Study No. 6 - Location : Transformer Division, Kanjur SMED in test room for reducing testing time of Industrial Transformer	
8.4.7	Case Study No. 7 : Location - Switchgear Division, Nasik SMED in Switchgear Press Shop	
8.5	IMPLICATIONS	119
8.6	CONCLUDING REMARKS	120

CHAPTER IX

PROPOSED MODEL FOR ADAPTATION OF JAPANESE MANAGEMENT PRACTICES

9.1	INTRODUCTION	121
9.2	OBJECTIVES AND SCOPE	121
9.2.1	Implementability	
9.2.2	Adaptability	
9.2.3	Transferability	
9.2.4	Flexibility	
9.2.5	Expandability	
9.3	SIGNIFICANT FEATURES	122
9.3.1	Details from Organisational standpoint	
9.3.2	Details from individual standpoint	
9.3.3	Foundations of the edifice	
9.4	IMPLEMENTATION ASPECTS AND ACTION PLANNING	131
9.5	CONCLUDING REMARKS	132

CHAPTER X

SUMMARY AND CONCLUDING REMARKS, CONTRIBUTIONS, LIMITATIONS AND SCOPE FOR FURTHER WORK

10.1	SUMMARY AND CONCLUDING REMARKS	134
10.2	CONTRIBUTIONS	136
10.3	LIMITATIONS AND SCOPE FOR FURTHER WORK	138

LIST OF FIGURES

	<u>Page</u>
Fig. 3.1 : The Tacticts and Techniques to Put the VAM Strategy	13
Fig. 3.2 : CEDAC - Cause and Effect Diagram with the Addition of Cards	21
Fig. 3.3 : Nature of Kaizen In a Simplistic Format	23
Fig. 5.1 : Organisation Structure	56
Fig. 5.2 : Factory Layout	56
Fig. 5.3 : Culture Change Mechanics	59
Fig. 5.4 : Transformation at TAFE	61
Fig. 6.1 : Analysis Of Responses To Question No.2 (see Appendix-A2)	73
Fig. 6.2 : Analysis Of Responses To Question No.4 (see Appendix-A2)	74
Fig. 6.3 : Analysis Of Responses To Question No.8 (see Appendix-A2)	75
Fig. 6.4 : Analysis Of Responses To Question No.9 (see Appendix-A2)	76
Fig. 6.5 : Analysis Of Responses To Question No.11 (see Appendix-A2)	77
Fig. 6.6 : Analysis Of Responses To Question No.13 (see Appendix-A2)	78
Fig. 6.7 : Analysis Of Responses To Question No.14 (see Appendix-A2)	79
Fig. 7.1 : Crompton Greaves Sales 1980 - 1996	81
Fig. 7.2 : Performance Indicators 1979/80 Thro' 1995/96-Fans And Appliances Division	82
Fig. 7.3 : Concept of Productivity vis-a-vis Profitability	89
Fig. 7.4 : Pre Tax Profits of CGL	89
Fig. 7.5 : Managing Excellence	98
Fig. 7.6 : Cause and Effect Diagram with the Addition of Cards (CEDAC)	100
Fig. 7.7 : Visual Control System (VCS)	101
Fig. 7.8 : Value Adding Management (VAM)	101
Fig. 8.1 : Organisation For JMPs Implementation	104
Fig. 8.2 : Layout of Back End Shield Machining Area	108
Fig. 8.3 : Old Layout of Stator Winding Department	111
Fig. 8.4 : New Layout of Stator Winding Department	112
Fig. 8.5 : CEDAC Diagram for Test Bed Rejection	113
Fig. 8.6 : SGIA's in operation at the time of JMPs introduction	120
Fig. 9.1 : The Adaptation Model in Totality	122
Fig. 9.2 : Model From Organisational Stand Point	124
Fig. 9.3 : High Points Necessary in Company Vision	125
Fig. 9.4 : Objectives of Training and Involvement	126
Fig. 9.5 : Individual Standpoint	129
Fig. 9.6 : Stages In Implementation of JMPs Adaptation	131

LIST OF TABLES

	<u>Page</u>
Table 3.1 : Kaizen And Innovation Compared	24
Table 3.2 : Evolution Of The Science Of Maintenance In The Period 1950 To 1970	28
Table 3.3 : Step By Step Procedure For Implementing TPM	29
Table 4.1 : Use of Japanese Form of Production Organisation	49
Table 5.1 : SGIA Evaluation	54
Table 5.2 : Workcentre Quality Audit Checklist	54
Table 5.3 : Producer Maintenance Card	55
Table 5.4 : Distinct Stages In Implementation	58
Table 5.5 : Change in Management Approaches	59
Table 5.6 : Stages In Transition For Culture Changes	60
Table 5.7 : Results Put up by TAFE	60
Table 5.8 : Improvements Resulting From Organisational Change In Modi Xerox (1989-90) (%)	63
Table 5.9 : Comparison Between Surajpur And Faridabad Plants Of Escorts Ltd. (1990)	65
Table 5.10 : Quality Circles And Related Area : J.K. Industries	66
Table 5.11 : Movement of Productivity	67
Table 6.1 : Survey Details Collation	70
Table 7.1 : Performance Indicators 1979/80 Thro' 1986/87-Fans And Appliances Division	88
Table 7.2 : Value Adding Management (VAM)	98
Table 8.1 : Western And Japanese Production Lines Compared	105
Table 8.2 : List of Case Studies Presented in Chapter-VIII	106
Table 8.3 : Specific Benefits In Case Of Back End Shield	109
Table 8.4 : Sample Kanban Board	116
Table 9.1 : Details of Training and Involvement Classifications	127

LIST OF APPENDICES

- APPENDIX-A1 Comparison between Leading Japanese Organisations and CGL - In Terms of Business Results
- APPENDIX-A2 Questionnaire Used For Survey On Adaptation of Japanese Management Practices
- APPENDIX-A3 Names of Companies Surveyed
- APPENDIX-A4 Standard Profit And Loss Account
- APPENDIX-A5 Company Vision
- APPENDIX-A6 List of JMPs and Types of SGIAs
- APPENDIX-A7 Training and Development

GLOSSARY OF TERMS USED

Following is the list of terms used in the thesis and their explanation. (in alphabetical order)

Sr.No.	Acronym	Full Form
1.	AQL	Acceptable Quality Levels
2.	CEDAC	Cause and Effect Diagram with the Addition of Cards
3.	CGL	Crompton Greaves Limited
4.	CFT	Cross Functional Team
5.	F&A	Fans and Appliances Division
6.	FMEA	Failure Mode Equipment Analysis
7.	FRL	Filter Regulator
8.	IR	Industrial Relations
9.	JIT	Just In Time
10.	JMPs	Japanese Management Practices
11.	LPG	Liberalisation, Privatisation, Globalisation
12.	PFD	Policy Function Deployment
13.	PIP	Profit Improvement Plan
14.	QC	Quality Circles
15.	QFD	Quality Function Deployment
16.	SBU	Strategic Business Unit
17.	SGIA	Small Group Involvement Activity
18.	SMED	Single Minute Exchange of Dies
19.	SPC	Statistical Process Control
20.	SPF	Single Piece Flow
21.	TAFE	Tractor and Farm Equipments Limited
22.	TLCs	Teaching Learning Communities
23.	TPM	Total Productive Maintenance
24.	VAM	Value Adding Management
25.	VAR	Value Adding Ratio
26.	VAS	Voluntary Active Support
27.	VCS	Visual Control System
28.	VE/VA	Value Engineering/Value Analysis
29.	ZD	Zero Defect
30.	ZQC	Zero Quality Control

CHAPTER I
INTRODUCTION

INTRODUCTION

1.1 WHY JAPANESE MANAGEMENT ?

World over, on a continuous basis, there is an extensive drive to sharpen managerial practices, particularly in the field of manufacturing to gain competitive advantages. Most of us are aware of the fact that in the sixties, British ruled the world economy; and in seventies Americans were at the top. In eighties the world witnessed the rise of the Japanese economy and the same nation today is at the pinnacle of industrial and financial progress.

It was only during the eighties that the Japanese opened up their economy. In 1985, for the first time in Chicago a three weeks seminar was held by the Japanese Masters on Value Added Management for executives from all over the globe. Since then the implementation and application of Japanese techniques has multiplied all over the world.

In addition to U.K., there is literature documented under 4.4 Malaysia and 4.3 Australia which points out to firms being managed by direct managerial involvement of the Japanese. While the current system in most of the companies in these countries have adopted Japanese techniques, authors have found a hybrid of Japanese and the local characteristic. However, there are more successes in cases where there were significant investment of managerial talent by the present Japanese firm.

Primarily, Taylorian philosophy looked at the "hands" of the worker. When a man was hired he was inducted for his brawn and not his brain. The planning element of a job remained with the so called white collar. Elton Mayo's Hawthorne Experiments proved that the "heart" of the worker is as important as the hands. The Japanese in the post-war era were responsible for bringing in the "head" of employee into the work place by what is known today world over as "Total Employee Involvement" and "Kaizen". Thus the route has been "hand - heart - head" as regards involvement of employees. Mohanty (1988) has enunciated this 3-H (head - heart - hand) principle in relation to productivity growth strategies for Indian Organisations. Fundamentally, it can be seen that Japanese Management Systems today are being well sought in global enterprises because such systems have always been concerned with the continuous improvement of quality and productivity.

Added to this is the basic simplicity and a commonsensical approach which the Japanese take. They also have an undisputed concern towards utilisation of the human being in totality. Their team approach adopted for problem solving, goal setting and visioning is unique in the world. They also have respect for the human systems i.e. the government, the customers and all other stakeholders. On top of all this is the fundamental faith which Japanese exhibit in systemic thinking.

1.2 SIGNIFICANCE OF THIS RESEARCH

Historically, management theories and paradigms have evolved from the western countries with the sole objective centered around production organisations. These theories and methodologies have been amply researched over the last several decades. Very little research has been carried out relating to the evolution and adaptation of Japanese management systems which have helped in designing new types of production organisations. The nature of organisational transformations that have taken place in many global enterprises due to the adaptation of Japanese management principles and practices has created a new vista for researchers to embark upon in investigating the modalities of such transformations. Therefore, it is attempted here in this thesis, primarily to conceptualise Japanese management systems and their institutional settings and to diffuse Japanese management principles and practices in culturally homogenous environments. On the face of it, these two aspects are not simple, because Indian organisations which have historically been exposed to as trained in the the British pattern of management and are habituated with the capitalistic form of governance; the institutional settings have been culturally vitiated over the years. Though the oriental specific cultural similarities existed between India and Japan, because of gradual distortion over a long history of economic and cultural invasion, the institutional environment has become alien to the adaptation of Japanese management principles and practices. Therefore, there is a need to construct a new model which may facilitate in transformation. The specific attempt here is to formulate such a model which hopefully would act as a normative guideline for Indian managers so as to harness the benefits of Japanese management practices.

India, in particular today is undergoing a rapid transformation through Liberalisation, Privatisation and Globalisation (LPG). Many industrial organisations are experiencing discontinuous changes due to environmental uncertainties and risks. The future of Indian corporate sector is totally dependent on new ways of thinking and formulation of new models. Where do we get these unsurpassable, and path breaking new models? Here in this thesis, we propose that Japanese organisations which have developed time-tested models and techniques and which have been used extensively even in alien institutional settings and have harnessed enormous amount of benefits, such adaptation may be a plausible route towards organisational excellence and making a successful transition from the present state to a future state.

Therefore, this research is an attempt to outline the significant features of such Japanese models and techniques, to study their viability and feasibility of application in Indian organisations. The most remarkable implication of this research, is to formulate few workable postulates which can be diffused in the Indian industry.

1.3 OBJECTIVES

For the purposes of this research, we have outlined the following objectives.

- i. To outline the evolution and explain the basic characteristic features of Japanese Management practices.
- ii. To study some of the most typical Japanese management practices.
- iii. To make a comparative assessment of modalities of adaptation of Japanese Management practices in alien country settings.
- iv. To develop modalities for a relational behaviouristic comparative mapping between Indian and Japanese organisations.
- v. To conduct a set of action research exercises to plan and implement Japanese management practices in one leading Indian corporate sector.
- vi. To present various examples of adaptation in a chosen leading Indian company, namely, Crompton Greaves Limited.
- vii. To formulate an adaptation model for Indian organisations.

1.4 ORGANISATION OF THE THESIS

This thesis has been organised in the following manner :

- Chapter I introduces the research agenda in terms of its significance, and outlines the objectives.
- In Chapter II it is attempted to discuss the evolution of Japanese Management practices and to highlight the characteristics features of Japanese approach to management.
- A brief review of the variety of the systems and techniques used in Japanese organisations is presented in Chapter III.
- A critical assessment of a set of diversified applications of Japanese management approaches in various international settings has been made in Chapter IV.
- In Chapter V an attempt has been made to present the synoptic picture relating to the diffusion of Japanese management practices in some pioneering Indian manufacturing enterprises.
- The results of an exploratory survey conducted in forty Indian organisations, on the implementation of Japanese management practices has been reported in Chapter VI.
- In Chapter VII the experiences and learnings through a set of action research projects before adaptation of Japanese Management practices, carried out in a leading Indian company (Crompton Greaves Ltd.) have been discussed. Certain derivatives emerging

from the learnings have also been explained. The multiplier effects generated through these Action Research projects are also outlined.

- Chapter VIII presents various examples of adaptation of Japanese management practices in Crompton Greaves Ltd.
- In Chapter IX an adaptation model has been proposed.
- Chapter X gives the summary, concluding remarks and scope for further work.

1.5 CONCLUDING REMARKS

Japanese Management Practices are being explored for adoption all over the world as they stress on small and continuous improvements. Experience shows that quantum leaps and jumps do not always sustain gains. In addition, JMPs, have a logical and commonsensical approach and they challenge the creativity of individuals while maintaining the team identity. India belongs to the same oriental cluster like Japan, having generated the very principles of Buddhism which culturally and homogeneously binds Japan. The proposed research is an attempt to outline the significant features of such JMPs and to study their adaptability in the Indian organisations.

Towards the end of the thesis, the adaptation model of JMPs have been developed on a deductive basis. The whole exercise has been driven by action which facilitates gathering a collective knowledge base for adopting JMPs which involve the human system in the holistic sense - fostering the ability to utilise head, hands and heart in a mode which transforms the organisation. The adaptation model proposed is an integral picture built by a strategic architecture while existing in a diverse but harmonious cultural environment.

CHAPTER II
EVOLUTION AND CHARACTERISTIC
FEATURES OF JAPANESE MANAGEMENT
PRACTICES

CHAPTER II

EVOLUTION AND CHARACTERISTIC FEATURES OF JAPANESE MANAGEMENT PRACTICES

2.1 INTRODUCTION

Japan is a small country with a population of about 125 million. Its total area comprising of four major island chains and 3900 small islands is only 377815 sq.km. It is therefore only one-ninth the size of India & one-25th the size of the United States. On this relatively small area the Japanese have built an ultra-modern economy in which many industries today are the world leaders.

2.2 OBJECTIVE

Japanese have evolved some management practices which today have crossed the boundaries of this small nation. Our objective here in this chapter is to trace these evolutionary practices and understand the characteristic features which are significant.

2.3 EVOLUTION

2.3.1. Pre World War - II

The opening of Japan in 1853 unleashed powerful currents of change resulting in the rapid spread of modern productive techniques. The dynamic interplay between domestic receptivity and foreign influences was thus critical in bringing about industrial and economic development. The industrial process was facilitated by the Tokugawa legacy of widely developed commercial practice, small scale manufacturing and agricultural industries and a high literacy rate. (Chatterjee B., 1990).

The Meiji Government was most interested in building up transport communications and an institutional infrastructure, as well as heavy industry and engineering for strategic reasons. The post-world war-I recession and turbulent 1920s also saw a growing gap within modern manufacturing between large dominant forms and those smaller in scale with lower productivity. Japan recovered quickly from the 1929-30 depression with demand led growth, including that for military supplies.

2.3.2. Post World War II

By 1945 much of the nation's productive capacity lay in ruins and per capita GNP was little more than half the pre war level. Economic collapse was followed by confusion, inflation and social and industrial unrest, and reconstruction was by no means an overnight process. The occupation authorities were initially concerned to demilitarise and democratise Japan's society and economy. Labour reforms legalised unions, changing the basis of employment and industrial relations. Some of the reforms were partial, but they had a lasting effect on the course of reconstruction.

With the deterioration of US-Soviet relations and developments on the Asian mainland, the occupation authorities came to see Japan as potential ally. Japan regained pre war per capita GNP levels, and was poised to enter a sustained period of high growth.

Small and medium sized firms in light industry were quicker to establish themselves after the war, but before long the industrial giants had made a mark.

Massive rationalisation and investment programmes in iron and steel industries and power houses began to pay dividends as did large scale modernization effort in the electrical machinery and automobiles, strengthened by innovation and technology links with foreign firms.

2.3.3. Understanding the Transition

The historical evolution of Japanese Management to the present form may be characterised as follows :

- i) Continuous encouragement by the political system of governance to increase and enhance the quality of life of people.
- ii) Dynamic and strong interaction between the development and business leaders to build a new economic order which can provide a model to the entire world.
- iii) The unquestioned patriotic beliefs and value systems of people which lay emphasis on work ethics, value addition and elimination of wasteful practices to upgrade the productivity fabric of the national economy as a whole.
- iv) Major investment in education to promote upgradation in knowledge base and innovation for research and development.
- v) The familiar relationship within the society encouraging mutual trust and support and collective wisdom in shared decision making.

The Japanese have got clear sense of strategy. The decision they have taken has played a major role in the development of their industries. Their general strategy, of course, is to develop products in their own markets that have been protected when the industry is small. developing high quality goods and taking benefits from economies-of-scale. Once they get the cost very low for high quality products they move into European & American markets.

Before the war, Japanese products were said to be "copied" and "cheap and bad". But afterwards, especially in recent years, the quality has been greatly improved and they are regarded as "cheap and good" though quite often lacking in originality. The high rate of growth of Japanese economy had been achieved by a high rate of investment specially by private companies and has been supported by personal savings.

2.4 CHARACTERISTIC FEATURES OF JAPANESE MANAGEMENT PRACTICES

The Japanese have achieved their current level of manufacturing excellence mostly by doing simple things; but doing them very well and improving them all the time continuously. Given below are some of the highlights.

2.4.1 Proactivity :

"Uncertainty is an inescapable part of the environment in which managers work and managerial performance in most organisations can be measured by the effective identification and resolution of uncertainty". (Plunkett and Hale, 1982). Japanese managers totally believe in prevention. Problems are identified and resolved before they surface and occur.

Proactivity through feed-forward intelligence is built not in the minds of managers alone but is designed into the total systems and procedures. Feed-forward information systems are considered to be the central edifice of Japanese planning. Planning, which is fundamentally futuristic, in Japan it is proactive and time consuming. Nothing is left to either randomness or arbitrariness adhocery.

2.4.2 Creating Clean, Orderly Workplace :

"Cleanliness is next to Godliness" is a fundamental belief in Buddhist perception of management. Accordingly, factories are exceptionally clean and orderly, regardless of the type of industry, nature of operational processes the age of company, its location etc.

Japanese keep their machines clean; workers keep their uniform, tools and equipments clean. Sources of litter are carefully controlled : boxes, plastic tubes and pipes are positioned to catch metal shavings and direct oil away from the workplace, spare parts and raw materials carefully stored in specified areas for proper identification, sorting and movement. Keeping their workplaces and machines in good order is the responsibility of workers themselves, along with maintaining output and quality.

2.4.3 Minimal Inventory :

Japanese very firmly believe "Inventory is the graveyard of any business" and they exhibit this belief in every aspects of manufacturing and sales. While purchasing raw materials, Japanese companies adopt the policy of nil or minimal inventory. Suppliers often make three to four deliveries a day to avoid excess stock in the plant. Finished goods are removed immediately from the floor and either transferred to a separate warehouse or shipped directly to customers or distributors. Work in progress inventory is also kept minimal by moving material steadily along the line.

2.4.4 Perseverance :

"Pursuing the last grain of rice in the corner of the lunch box" is a Japanese saying that describes a person's tendency to be over scrupulous.

A classical example we can find in chasing of zero defect by Japanese—they never give up the efforts for bringing down rejections from existing levels to parts per thousand, parts per million, parts per billion and so on till total perfection is achieved.

2.4.5 Thinking Quality In :

Japanese wisdom says "Loss of quality is a loss to the society", and in accordance managers think quality in the product, first, by careful planning in the product design stage. Interminable discussions among engineering, production, quality assurance and sales personnel takes place before the design is made final. Product design is viewed as part of a total product process system. Once production begins, managers concentrate on holding to these standards.

In Japanese companies "We is everybody, and "them" are defects."

Material Managers also think quality in by recognising that even the most carefully designed and stable production process cannot maintain high quality if the materials that enter the process are defective. The pressure put on supplier to improve the quality of their own materials is incredible to an American, but Japanese manufacturers do not think that simple pressure is sufficient. Instead they work with suppliers to ascertain why problems arise and to help solve them.

2.4.6 Personnel Management Issues :

- i) Life Time Employment and Seniority System : Usually a person enters an enterprise after completing the graduation and remain there for life. He is included in the annual plan and receives increase in wages and promotions under seniority system. This system is referred as Life time employment.

Length of service i.e. experience with the company is given extremely high weightage.

Under the system of lifetime employment and seniority that necessarily reduces vertical internal mobility, more authority is delegated down the chain of command. "Since the system cannot move capable individuals upward, it moves authorities downward". (Mcmillan C.J., 1984).

- ii) Familism Concept : In Japan a framework is constructed based on specific locality of organisation, without reference to qualification, to form a vertical society. Accordingly the employees of an enterprise are relatives within one family.
- iii) Union within the Enterprise : A Japanese labour union exists within an enterprise. National level labour unions are not as strong than are in India or US in terms of

leadership or control. Union co-operates with management for company development.

- iv) Education and Training is at a high level : In Japanese organisations about 5-10% training time is invested every year per person. This works out to 15 to 30 days of training per person per year.

Education in Japan almost totally determines career chances. Point of entry into the company hierarchy, compensation for the career, and chances for a high status position in the career are substantially determined by the amount of education. The employee obtains before joining the company and thus the status level at which he enters.

- v) Concern For Employees' Family Affairs : Employees are provided with housing, gifts upon marriages, and child births, medical services etc. as part of company welfare scheme. This reinforces the structure of familism and sense of belongingness with one's organisation.
- vi) Labour mobility : The pattern of employment for large Japanese companies has been to recruit all personnel directly from schools. They are not employed for a particular skill, nor for a particular job opening. Rather they are employed because their personal background and characteristics, and their general education, make them appear to be desirable and useful persons to bring into the company for their career. Similarly, the new employee makes his choice of job offers not in the terms of the attractiveness of a particular position and its compensation, but rather because the organisation as a whole appears to be a desirable group with which to identify oneself. (Imai, 1986).

vii) Participative Decision Making

Ringi System :

The classical theory of management lays down a principle called Unity of Command which states that each person in an organisation receives orders from only one superior. In the Japanese Ringi system the authority for decisions is not at all specified and the entire group is responsible for the decision.

The first step is to prepare a paper on the subject under consideration, which is circulated to all concerned. The recipient signs it with comments, if any. The paper eventually reaches the top man who affixes his approval stamp. The system requires that the proposal be owned by all. If opposed by someone, then it is returned to the initiator.

If the group is small, personal face-to-face discussion is preferred. For a large group, however, a written document is considered essential.

The essence of the Ringi system is that decision should be based on consensus. Every proposal is widely discussed in informal groups and a consensus is evolved before it

is formally approved by the competent Committee. This consensus decision is qualitatively better as they embody the experience and knowledge of a number of employees.

However, the disadvantages of this system are that decisions take a longer time to be reached. Moreover the decisions can be pedestrian and not creative.

Ouchi (1981) states "The group decision creates commitment of all parties to the chosen solution. Findings of behavioural science suggest that often the quality of commitment to a decision rather than the quality of some dimension of the decision rather than the decision itself is the most critical factor to the fate of a project."

2.4.7 Some Significant Remarks :

It can be stated that the necessary elements of Japanese management are significantly different from the rest of the world. The unique features lie in :-

- Grant of autonomy to the work place
- Consensual decision making at every level.
- Shared and pooled knowledge to create a learning organisation.
- Adherence to the basics and finding problems to eliminate the root causes.
- Continuously developing human resources through planned interventions. (Mikani, 1987).
- Success of Japanese Management lies in 5Fs according to Bhuvan (1992) :
i) Farsightedness ii) Flexibility iii) Forcefulness iv) Fastidiousness and v) Fulfilment

2.4.8 Macro Level Concerns :

- i) Japanese have been extraordinarily successful in high savings rate and accumulating funds and making these funds into investments. Japanese government encourages personal savings and more over they are not required to pay income tax on these savings.

Elsewhere in the world, government regulation actually encourages borrowing, while in Japan, basic policy is savings.

- ii) Japan has always produced more well trained people than West e.g. the number of people who graduate as engineers in Japan are much more as compared to the U.S.
- iii) The Japanese have always felt that it is possible for the other people to do research, they would do much better in collecting the information about the research, upgrading it, adding some engineering skills and moving into product development.

Japan's investment at the same time into R&D is much higher than any country of the world.

- iv) Any Japanese who goes abroad thinks of touring as an opportunity to learn. He is always looking for ideas that he can take back home ideas that can be applied nationally to his own company or his own organisation.

- v) It is quite material that many European countries feel that Japan has a narrow view of their own self interest. They are over eager to gather information but not to share the same, and overly eager to see manufactured goods but not to bring such goods.

The Japanese general trading companies have not been given much publicity. Such companies have many advantages. This system of marketing allows the manufacturers to concentrate more on the quality products and worrying about the engineering and production side. They leave the marketing and information gathering to the trading companies.

In this way a company develops a global strategy for manufacturing without spending a great deal of money.

- vi) Another important reason for Japan's success is the cooperation between the government and the business. In Japan people in industrial sectors often meet together and exchange views with groups.
- vii) One more area where Japan has done extremely well is that of long range planning. It is not that they set up a five year plan for everybody to follow rigidly. Instead they have a rolling plan. Every year they have a new plan.
- viii) Another important aspect is that the Japanese industry does not depend upon the performance of stock market. They depend more on banks for their loans and capital.

2.5 CONCLUDING REMARKS

The problems facing the industries today are not simple and neither are their solutions. The Japanese have an enormous capacity to develop their own skills and capabilities, but they have also developed this by learning from others, technologically and managerially. In Indian context all Japanese techniques may not fit directly, but we have to develop adaptive management systems that will conform with the internal constraints and external imperatives. Schonberger (1982) adds 'determination to improve' and 'belief that change is possible' as additional attributes which the Japanese possess.

If Japanese have achieved profound growth in terms of technology and economy by using commonsensical principles of management, then it is possible that any nation, particularly India which is impelled by oriental culture and generic values of Buddhism which are basically derivatives of Hinduism, can learn from Japanese management systems and adapt it successfully.

It is to our perception, that any distortions in the Indian pattern of management can be corrected by choosing the appropriate path of transition.

CHAPTER III
MANAGEMENT PRACTICES - MADE IN JAPAN

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3.1 INTRODUCTION

Between 1950 and 1980, the Japanese successfully developed, institutionalised and internalised several management practices, which have stood the test of time and have been diffused into other institutional and cultural settings. The attempt in this chapter is to briefly describe some of the commonly sought after JMPs.

Remington (1991) argues that there is no such thing as Japanese Management techniques, only the way the Japanese have developed and employed existing philosophies and methods. In support Remington (1991) further observes that workers in Japanese managed companies in UK and Europe have not become Japanese in their attitudes, suggesting that perhaps techniques and systems may be culture free and could be adapted successfully in any alien setting.

3.2 VALUE ADDING MANAGEMENT (VAM)

3.2.1. What Is It ?

We can define VAM as "a strategy of continuous improvement through the progressive identification and elimination of all non value adding and non-service adding wastes with total creative involvement of all employees."

Correct implementation of this strategy has given enormous benefits in key business areas. The starting point is the formula for profit which is :

$$\text{Profit} = \text{Unit Price} - \text{Unit Cost}$$

There is very little control over the price, as it is decided by factors of competition and the market forces operating at a given time. Therefore, profit can be earned only by managing the cost.

But, $\text{Cost} = \text{Material Cost} + \text{Processing Cost} + \text{Finance Cost} + \text{Personnel Cost} + \text{Other miscellaneous expenses}$.

Again, there is very little control over material costs as it is decided by the market conditions. However, we have control mainly on processing costs. (Kobayashi , 1990)

In business of manufacturing, we buy raw material and add value to it by converting the raw material into finished goods. Value is added by way of machining, assembling, packing, testing, manufacturing and painting etc. In the entire process, handling and storage are seen to be all pervasive including waiting times before each machine, before inspection and finally before despatch to customer.

If we examine how much time is really taken in value adding activity, we may be surprised to find it is in the region of 5% of the total manufacturing time. The key lies in improving this 5% steadily to 50% or more.

The techniques required to put the VAM in place are shown below in Fig. 3.1 :

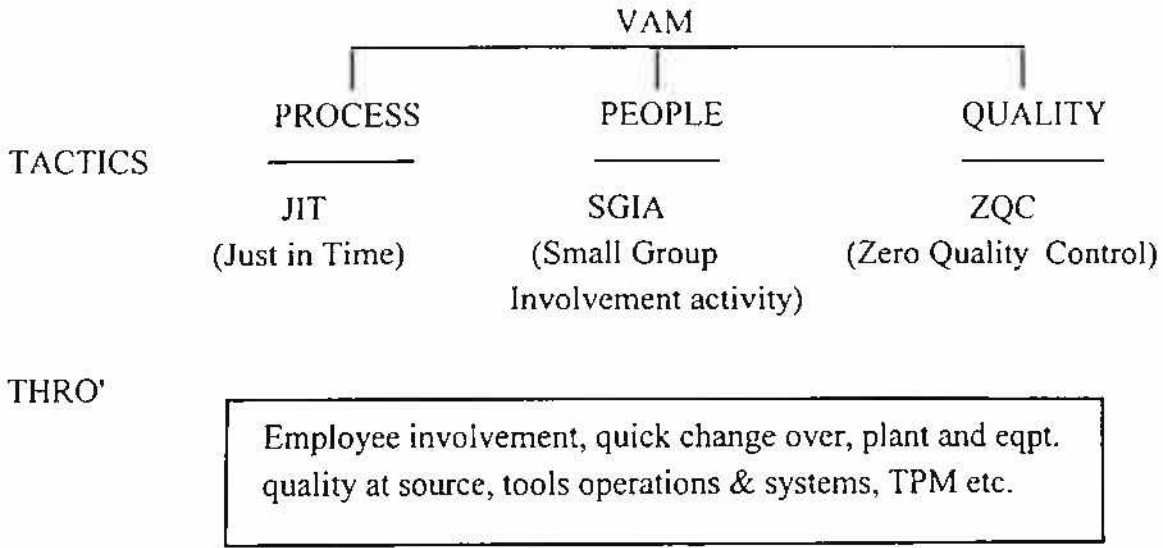


Fig. 3.1 : Techniques for VAM

3.2.2 Characteristic Features :

- i) Production in smaller and smaller batches with quantity approaching one number by drastically reducing or eliminating the set up time on all machines and work stations.
- ii) In any given section, the WIP should not be more than one per machine or one per work station that means following "Single Piece" production.
- iii) Production everywhere at market rate i.e. If market wants 60 motors per day then in all the shops, components should be produced @60 per day.
- iv) Full control in reducing WIP, in other words, take raw material only after producing finished components and quantity of raw material should not be more than finished quantity produced.
- v) Work on improvement which will continuously reduce WIP.
- vi) Zero defect-quality production-no defective components to be passed on to the next work station.
- vii) Every one should be involved in improvement activity.

3.2.3. Benefits

The following benefits can be derived by applying the principles of VAM :

- Saving in factory space
- Improvement in productivity
- Reduced cycle time leading to reduced process costs
- Satisfied customer
- System flexibility
- Administrative efficiency
- Quality improvement due to faster detection and correction of defects.

3.3 5'S JAPANESE OR 6'S AMERICAN

A fundamental way to organise the workplace, was found by the Japanese, namely the 5'S method. Later on, this found substantial interest in America which developed the 6'S method. adding, "Stick to the rules scrupulously" to the 5'Ss. The methodology itself is logical, follows simple common sense rules and arrives at a clean workplace which heightens morale of people at the same time releasing substantial space and cutting down the time for searching any thing - may it be a tool, or a file or a document.

3.3.1 What Is It ?

5S - JAPANESE

SEIRI	:	SORTING
SEITON	:	SYSTEMATISING
SEISON	:	SWEEPING
SEIKETSU	:	SANITIZING
SHITSUKE	:	SELF DISCIPLINING

6S - AMERICAN

1	:	SORT THRU' & SORT OUT
2	:	NO SEARCHING
3	:	SET LIMITS
4	:	STANDARDISE
5	:	SHINING EQUIPMENT
6	:	STICK TO THE RULES SCRUPULOUSLY

3.3.2. Characteristic Features Of 5'S (6'S)

The 6'S's programme is the review and reorganisation of work place for improving the Quality of workplace.

Objectives :

1. To eliminate searching
2. To promote adherence
3. To promote waste identification
4. To create environment promoting creativity.

All employees upto & inclusive of senior manager can participate by forming groups of 3 to 5 people.

3.3.3 Methodology

Fix a day & time for meeting (1 hour per week).

Identify area for improvement.

Then follow six steps.

STEP 1 : SORT THRO' SORT OUT

After deciding the area, make a list of everything in that area, even empty space. For records of present status, take photographs, slides.

STEP 2 : SET LIMITS

Fix quantity of each item. Mark place for everything. Give addresses, so, that there is place for everything, everything is in its place.

STEP 3 : SET STANDARDS

Present the proposal to the Steering Committee. Document all proposals after the approval.

STEP 4 : SHINE EQUIPMENTS

Implement the approved proposals. Ensure that everything is shining. Best way to keep anything clean is not to let it become dirty.

STEP 5 : SEARCHING ELIMINATION

Keep a track of benefits. Monitor results of searching time reduction. If searching is not eliminated review the proposals.

STEP 6 : STICK TO RULES SCRUPULOUSLY

It is appropriate to ensure adherence by regular review and using visual controls extensively.

Additional prerequisites :

- 1) 6'S's must be a part of Total Improvement Programme.
- 2) 6'S's must be a company-wide programme.
- 3) We need to involve everyone, not only those we like.

3.3.4 Benefits

- Creation of additional space
- A thing for a place and a place for a thing.
- No blood pressure because of searching.
- Handing over jobs to people not at all difficult.
- Inspiration from a clean and orderly workplace.
- More effective working at the personal and group levels.

3.4 POKA-YOKE

Bodek Norman, Editor of Shingo (1987) In the book "Zero Quality Control - Source Inspection and the Poka-Yoke system", writes in the foreword - "I believe that the book is a great gift from Mr. Shingo to American manufacturing and should save us literally billions of dollars in the years ahead. Quality is the easiest way to improve productivity. In fact, I will go further and say that quality is essential for survival."

3.4.1 What Is It ?

Poka-Yoke (in English, "mistake-proofing") looks at a defect, stops the production system, and gives immediate feedback so that we can get to the root cause of the problem and prevent it from happening again. Source inspection looks at errors before they become defects and either stops the system for correction or automatically adjusts the error condition to prevent it from becoming a defect. Using Poka-Yoke devices and source inspection systems has enabled companies like Toyota Motors to virtually eliminate the need for statistical quality control (SQC).

3.4.2 Significant Features :

- i) Poka-yoke systems involve carrying out 100 percent inspection and give immediate feedback for action when errors or defects occur. This approach therefore neatly solves the problems posed by the old-fashioned belief that 100 percent inspections take too much trouble and cost too much.
- ii) A poka-yoke system is a means and not an end. Successive checks and self-checks, can function only as informative inspections, in which feedback and action take place after a defect has occurred. In fact, they make the occurrence of at least one defect inevitable. Of course, in cases where repairs can be made it looks as though no defects occurred.

Therefore, source inspections and poka-yoke measures must be combined if one wishes to eliminate defects (Zero QC System).

- iii) The persistence of defects in production activities creates the need to find and eliminate those defects which will not be found unless 100 percent of the items involved are inspected. Generally speaking, acceptable items are overwhelmingly more numerous than defective ones, so this sort of 100 percent inspection entails considerable 'wasted' work. Even sampling inspection does not guarantee freedom from defects. Hence the need to combine Poka-yoke with AQL charts.

3.4.3 Types Of Poka-Yoke Systems

Poka-yoke systems fall into (i) regulatory function categories, and (ii) setting function categories, according to techniques they use.

Poka-Yoke Regulatory Functions

Two regulatory functions are performed by poka-yoke systems.

Control Methods

These are methods that, when abnormalities occur, shut down machines or lock clamps to halt operations, thereby preventing the occurrence of serial defects.

Warning Methods

These methods call abnormalities to workers' attention by activating a buzzer or a light. Since defects will continue to occur if workers do not notice these signals, this approach provides a less powerful regulatory function than control methods.

Poka-yoke Setting Functions

This can be best explained in terms of detecting the presence of a passage or a break in the continuity of production line, measurement, shape, foreign matter, damage, or colour mismatch.

These can be set on limit switches, photo electrical switches, beam & dimension sensors, vibration sensors, fluid elements, pressure gauges, thermometers, thermostats, thermocouples, relays of all types, counters, timers and time switches, buzzer lamps and flashing lamps.

3.4.4 Benefits

- Excellent for reaching zero defect status.
- Useful for eliminating the 'human' element in inspection, reducing subjectivity to nil.
- Produces early warning signals, very pro-active in nature.
- Low cost, non threatening mistake proofing system.
- Generates satisfied customers.

3.4.5 Conclusion

In the words of the great Sheigo Shingo (1987) himself "There are three types of engineers : table engineers, who spend all of their time in meetings arguing about problems on the shop floor; catalog engineers, who scour the latest catalogs for new equipment to solve these problems; and "nyet" engineers, who vote against almost every improvement suggestion."

Dr. Shingo advises all the types to become "Improvement Engineers" constantly on the quest to find easier, better and cheaper ways of achieving productivity and quality. In this regard poka-yoke systems have stood the test of time and are a consistent creative avenue for all improvement engineers.

3.5 JUST IN TIME (JIT)

The concept of JIT was first introduced in Japan, Taiichi Ohno (1980), the former vice-president of Toyota Motor Company, who is regarded as the father of this concept. In his own words "JIT is - make only what you need, in the quantities you need, when you need it." In the aftermath of the 1973 oil shock, most of the Japanese companies adopted it and were successful in conquering the depression. In fact, JIT is considered to be one of the major factors contributing to Japan's industrial performance. During the present decade, this concept has received worldwide acceptance and has been implemented by many companies in the West. American industries, particularly the giant automakers General Motors, Ford and Chrysler, led the American transition to JIT and were soon followed by giants in other fields like General Electric, Hewlett Packard, Harley Davidson, International Business Machines, Schlumberger Limited and Xerox Corporation to name a few.

3.5.1 What Is It ?

The Japanese system consists essentially of two types of procedures and techniques. The two types pertain to (i) Productivity; (ii) Quality. The aspect of the Japanese system dealing most directly with productivity is known as the just-in-time system which directly addresses the material cost component of productivity. The indirect effects are even more pronounced, affecting elements of productivity from scrap to worker motivation to process yield. Japanese quality improvement is partially addressed by just-in-time, but there are a host of other Japanese quality improvement concepts and procedures as well. A term that is often used in Japan to describe the set of Japanese quality improvement procedures is Total Quality Control (TQC), which in turn encompasses some of the just-in-time techniques, and improves productivity through avoidance of waste. Schonberger (1972).

3.5.2 Significant Features

i) Quality

The achievement of high quality levels is crucial for successful implementation of JIT. Commonly used quality control programmes in support of JIT include zero defects, SPC, QC, TQM, Poka-Yoke etc.

ii) Cell construction

The physical layout of production facilities in a JIT system should be arranged so that the process flow is as streamlined as possible, i.e. for each component, the proportion of value added time is maximised. The emphasis in a JIT system should be on a product oriented layout rather than a process oriented layout, use of dedicated lines, U shaped or parallel lines, use of small machines with multiple copies.

iii) JIT Purchasing

a) Purchase lot size : should be small and there should be frequent deliveries.

b) Number of suppliers : Few and ideally one for each material or class of materials.

c) Criteria for formal supplier selection and evaluation :

- Product quality
- Willingness to enter into long term relationships
- Geographical location of supplier source (local suppliers preferred)

iv) Multifunctional Workforce

A flexible workforce is extremely critical for JIT systems. This can be achieved by cross-training and job rotation on both shop floor and office. Monden has elegantly described the role of multifunctional worker in Toyota in adapting to demand fluctuations.

v) KANBAN

A JIT system is often described as a pull process in which the demand controls the production line. It is here where the Kanban system comes into picture. Kanban in Japanese means a 'card'. Kanban system is an information system to harmoniously control the production quantities in every process.

3.5.3 Benefits

- Reduction of manufacturing cycle time, reduction of scrap, inventories, space requirement, material handling and elimination of non-value adding operations.
- Quality is improved due to fast detection and correction of defects, use of automatic stop devices (autonomation), higher quality of purchased parts, worker centred quality control and statistical process control.
- Due to fast response to engineering change, alternative designs can be quickly brought on the shop floor.
- Improvement in productivity due to flexible work force, reduced rework, reduced inspection, reduced part delay and reduced throughput time.

- Systems flexibility, i.e. response to change improves. The change may involve variation in quantity of demand, type of products, routing pattern, alternate materials, workforce availability, etc.
- Because of fewer suppliers, minimal expediting and release of papers, simple communication and receiving, administrative efficiency increases. Many times, incoming inspection is eliminated altogether.

3.5.4 Conclusion

Implementing JIT may not involve an ethnic cultural change, but it does challenge an organisation to alter its company culture. Once implemented, it triggers a chain reaction of benefits. In most applications, the benefits reported have been dramatic.

Apart from the quantified benefits, there exist several intangible and non-quantifiable benefits.

3.6 CAUSE AND EFFECT DIAGRAM WITH THE ADDITION OF CARDS (CEDAC)

In 1982 Norman Bodek, President of Productivity, Inc., an American firm specializing in quality and productivity improvement technologies from around the world, met Fukuda when Bodek was leading an executive study mission to Japan. A friendship and business relationship was born and, in 1983, Productivity, Inc. had Fukuda's book, *Managerial Engineering*, translated from the original Japanese and published.

Bodek was impressed by the power of continuous improvement, the simplicity of the CEDAC approach, and the benefits it had produced for Sumitomo. Anticipating its enormous success in America, he decided to make CEDAC more widely available to U.S. business and industry. In 1984, Dr. Gwendelyn Galsworth joined Productivity for the express purpose of developing CEDAC into a comprehensive tool that American companies could understand, appreciate, and successfully implement. Dr. Galsworth, Dr. Derek Kotze, and their colleagues worked on the development of CEDAC over the years, conferring frequently with Fukuda and piloting the American version of CEDAC in a variety of settings.

3.6.1 What Is It ?

CEDAC, which stands for "Cause-and-Effect-Diagram-with-the-Addition-of-Cards", is a systematically applied method for implementing the four basic functions of continuous improvement.

- i) Determining the Effect of the condition-to-improve (the Problem Effect) determining a way to show if the problem is getting better or worse (the Improvement Measurement), and determining the condition-to-be-achieved (the Target Effect).
- ii) Accessing information and ideas on causes, questions, and possible improvements to the problem situation.
- iii) Selecting, Testing, and Adopting improvement ideas that cause the desirable outcomes we seek.

- iv) Stabilizing the method that is becoming the current new standard procedure that everyone will follow.

The following Fig. 3.2 shows graphically the essence of CEDAC.

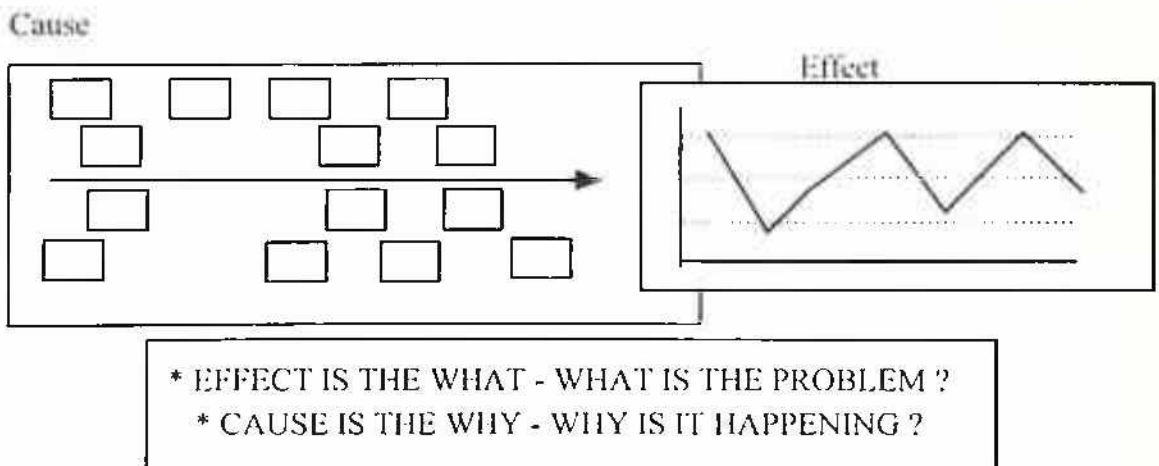


Fig. 3.2 : Cause and Effect Diagram with the Addition of Cards (CEDAC)

3.6.2 CEDAC Origins

Although it originated in Japan, the CEDAC approach to continuous systematic improvement has undergone significant further development both in Japan and America since its arrival in the United States in 1983. Here's its story.

In the mid-1970s, one of Japan's most successful manufacturing companies, Sumitomo Electric, decided to expand into the international market. As part of that decision, Sumitomo saw the need for improving its standard operating procedures.

As a result, Sumitomo mandated the development of a method for developing effective standard procedures and asked Fukuda to lead the project. Fukuda, who had begun his distinguished career in 1954 as an engineering graduate from Kyoto University, had worked at Sumitomo for nearly 20 years in a variety of quality and productivity positions. He was eager to get started.

Originally, thirty-two Sumitomo employees volunteered to form the project's study group - plant managers, foremen, production engineers, industrial engineers, blue and white collar are alike. Fukuda asked each volunteer to pick a workplace problem and develop and test his own approach to solving it. Sumitomo piloted CEDAC in its 40 plants between 1976 and 1979. The 350 CEDAC projects that resulted enormous benefits that amazed everyone, including Fukuda and his study group. The paper published by Fukuda on the miraculous results won him the 1978 Nikai Award, (equivalent of the Deming Award).

3.6.3 Significant Features

- i) Top management commitment to improvement. Input of necessary resources such as people, material, money, and time for improvement.
- ii) Acquisition of reliable methods for improvement. Technology, managerial engineering.
- iii) Self-development of reliable methods. Study group activity and continual development of the workforce.
- iv) Dissemination of reliable methods to all members including subsidiaries and subcontractors. Off-the-job training and on-the-job training.
- v) Accumulation of improvement through everyone's participation and its promotion within daily work - CEDAC System.

3.6.4 Benefits

- The CEDAC Diagram is one of the key tools used to achieve Continuous Systematic Improvement (CSI)
- The CEDAC Diagram systematically collects, analyzes, and integrates information on quality and productivity problems and generates concrete solutions to them. Through a step-by-step process that involves all employees directly.
- CEDAC integrates statistical data simply and powerfully into the improvement process, providing a practical, focussed application for SPC tools and training.
- CEDAC breaks down barriers between employees and management, builds accurate, fact-based communications, and fuses management expertise with employee know-how.
- CEDAC brings problem solving out of the meeting room and into the workplace, and involves employees in a process of continuous improvement day-to-day.
- CEDAC adds a new dimension and life to small group activities and quality circles by providing a specific task and improvement focus related to management goals.
- CEDAC is a powerful strategy as well as a proven method for standardisation, problem-solving, and systematically eliminating waste organizationwide.

3.6.5 Conclusion

All companies that strive for world class excellence recognize that it is essential to establish and maintain a standard of continuous improvement. In real terms this means having an effective system of information gathering and problem solving on all levels of an organization. This also means utilizing a systematic method for identifying areas in need of improvement - our problems and what is causing them, so that we can keep problems from recurring. CEDAC helps us to do just the above.

3.7 KAIZEN

Talwadekar (1994) states "in recent years, the economic and social significance of the manufacturing sector has drawn much worldwide attention. Firms across a wide spectrum of key industries are seriously adapting a series of innovations, both in technology and management systems, in order to benefit from their great potential. For any industry to achieve high quality, productivity and to be internationally competitive in cost, delivery and innovation, effective implementation of the new management practices is considered imperative".

3.7.1 What Is It ?

KAI means 'small' and ZEN means 'good' Therefore Kaizen means "Continuous Improvement"; which diagnoses the major root causes of inefficient working in organizations and offers a systematic approach to changing the attitudes of people, leading to miraculous organizational changes.

However, we often fail to implement any imported system, because we tend to copy first, then struggle and give it up, rather than try to appreciate the principles underlying the new system and then adapting it.

The Fig. 3.3 below highlights the nature of Kaizen in a simplistic format.

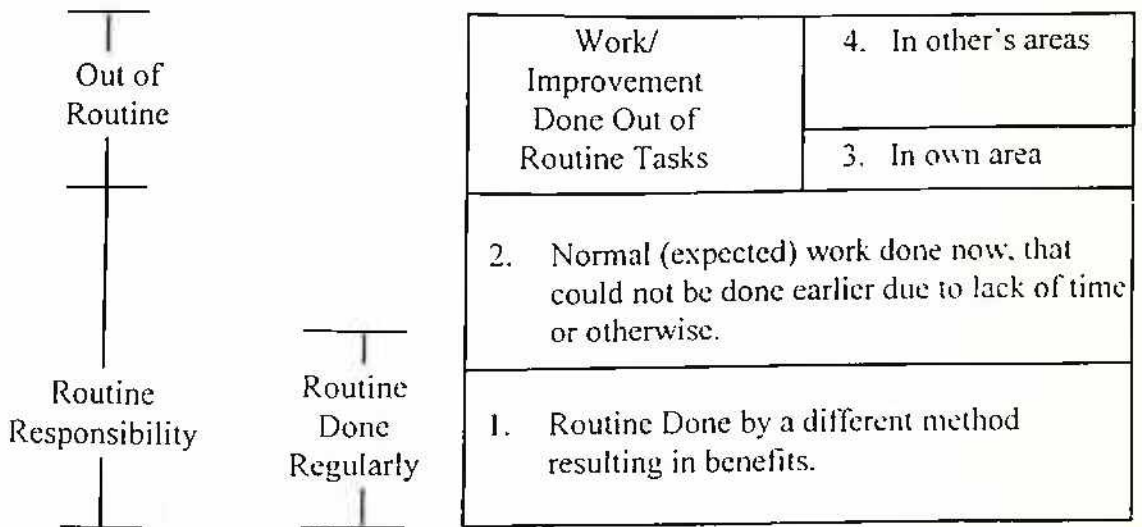


Fig. 3.3 : Nature of Kaizen In a Simplistic Format

3.7.2 Characteristic Features

i) Kaizen vs Innovation

Kaizen is a concept midway between existing situation and striking innovation. The differences are clearly brought about in the Table 3.1 below.

Table 3.1 : Kaizen And Innovation Compared

	DIMENSION	KAIZEN	INNOVATION
1.	Effect	Long-term and long lasting but undramatic	Short-term but dramatic
2.	Pace	Small steps	Big steps
3.	Time frame	Continuous and incidental	Non-incremental
4.	Change	Gradual and constant	Abrupt and Volatile
5.	Involvement	Everybody	Select few champion
6.	Approach	Collectivism Group efforts	Rugged Individualism
7.	Mode	Maintenance and Improvement	Scrap and rebuild
8.	Spark	Conventional know-how and state of the art	Technological breakthrough, new inventions, new theories
9.	Practical requirements	Requires little investment but great effort to maintain	Requires large investment but little effort to maintain
10.	Effort Orientation	People	Technology
11.	Evaluation criteria	Process and efforts for better results	Results for profit
12.	Advantage	Works well in slow growth economy	Suitable for developed economy

ii) When to do Kaizen ?

Kaizen can be done whenever there is a need for self improvement or improvement is desired in working methods.

iii) Where to do Kaizen ?

Kaizen can be done in the house, workplace or any social setting.

iv) Areas for Kaizen

Shown below are some of the Kaizen areas :

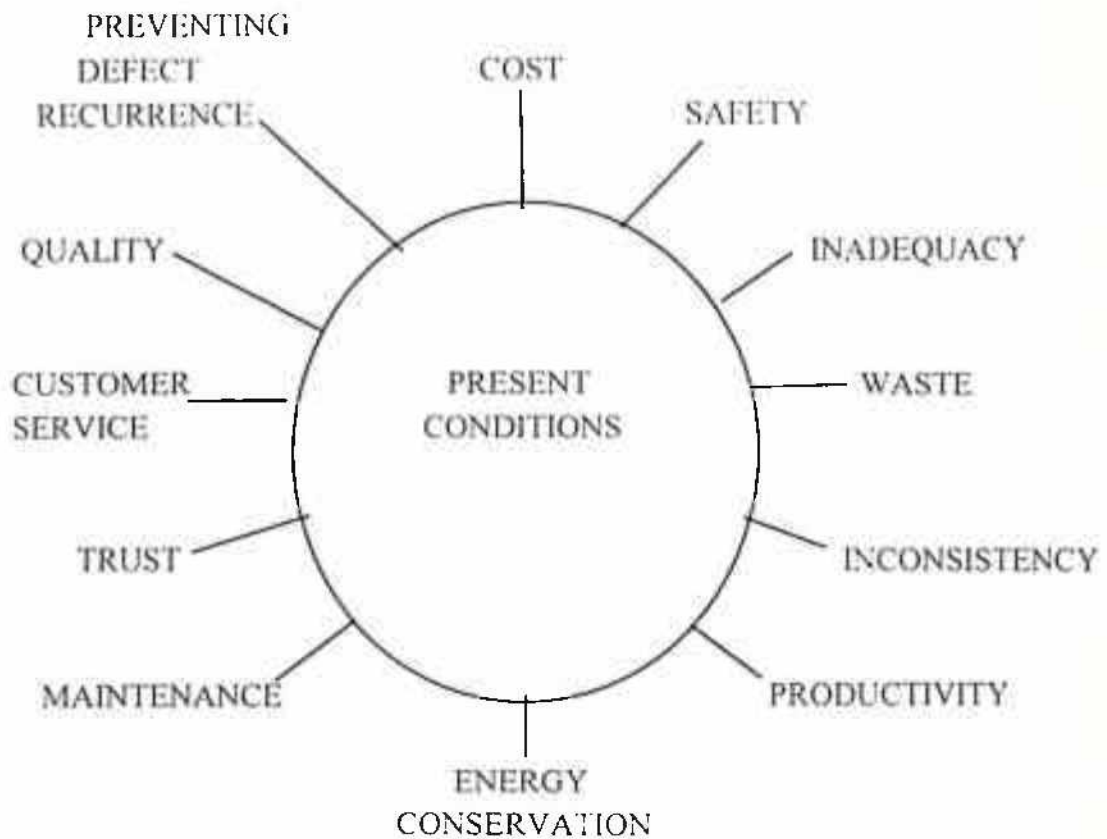


Fig. 3.4 : Areas For Kaizen

v) How to do Kaizen ?

The acronym "SCARE" can be used as a methodology for doing Kaizen, namely

S: Simplify, C: Combine, A: Add, R: Rearrange, E: Eliminate

A systematic critical examination can be done by following the 5W - 1H method namely - **WHAT** - What is Wrong ?, What is causing the problem ?, **WHERE** - Where is the problem ?, Area, Location etc., **WHO** - Who does it ?, Who is responsible for this ?, **WHEN** - When does it happen ?, **WHY** - Why does it happen ?, Why do we do it this way?, **HOW** - How else could it be done ?, How to improve the situation ?

Also, we can get to the root cause by asking **WHY ?** to the problem situation five times in succession.

3.7.3 Benefits

- Gives more satisfaction and motivation through seeing our ideas implemented.
- Makes job easier and safer.
- Improves customer service and makes customers happier.
- Work smarter and not harder.
- Improves productivity and quality.
- Achieves organisation's growth.
- Aids self development.

3.7.4 Conclusion

Kaizen does not believe that improvements come by coincidence. They always come as a result of planned and conscious efforts. Some useful clues are to start small, easy areas, making improvement a daily part of our routine and using group collective wisdom for continuous improvement. Practice of Kaizen keeps one motivated and builds self esteem and boosts confidence by virtue of contributions which one makes, even though small but appears off and on.

3.8 SINGLE MINUTE EXCHANGE OF DIES (SMED)

The major difficulty encountered in many factories is that frequent setups are necessary to produce a variety of goods in small lots. With the adoption of the SMED system, the economic-lot approach simply collapses. It has been argued forcefully in the past that diversified, low-volume production is extremely difficult and that high-volume production of fewer kinds of items is more desirable. In reality whether production is to be diversified and low-volume, or more homogeneous and high-volume, depends on both the market (demand) and production conditions (supply).

3.8.1 What Is It ?

In his own words, Shigeo Shingo (1985) has stated "In my experience, most people do not believe that a four-hour setup time can be reduced to only three minutes. In fact, when presented with this claim, most people will maintain that it is impossible.

The SMED system however, contains three essential components that allow the "impossible" to become possible, namely (a) A basic way of thinking about production, (b) A realistic system & (c) A practical method.

It took nineteen long years to develop the SMED system. It began while Shigeo Shingo was conducting an improvement study for Toyo Industries in 1950. There are two kinds of setup operations : internal setup (IED, or inside exchange of die), which can be performed only when a machine is shut down, and external setup (OED, or outside exchange of die), which can be done while the machine is running. A new die can be attached to a press, for

example, only when the press is stopped, but the bolts to attach the die can be assembled and sorted while the press is operating.

3.8.2 Characteristic Features

Preliminary Stage : Internal and External Setup as they are :

In planning how to implement SMED, one must study actual shop floor conditions in great detail either by a stop watch time study or a work sampling study or by interviewing workers and better still by videotaping the entire setup operation.

Stage 1 : Separating Internal and External Setup

Preparation of parts, maintenance and so forth should not be done while the machines are stopped. If we make a scientific effort to treat as much of the setup operation as possible as external setup, then the time needed for internal setup - performed while the machine is off - can usually be cut some 30% - 50%.

Stage 2 : Converting Internal to External Setup

- Re-examining operations to see whether any steps are wrongly assumed to be internal.
- Finding ways to convert these steps to external setup.

Examples might include preheating elements that have previously been heated only after setup has begun, or converting centering to an external procedure by doing it before production starts.

Stage 3 : Streamlining All Aspects of the Setup Operation

Stage 3 consists of detailed analysis. The following examples are drawn from successful applications of stages 1, 2 and 3.

- At Toyota Motor Company, the internal setup time of a bolt-maker - which had previously required eight hours - was cut to fifty-eight seconds.
- At Mitsubishi Heavy Industries, the internal setup time for a six-arbor boring machine - which had previously required twenty-four hours - was reduced to two minutes and forty seconds.

Stages 2 and 3 do not need to be performed sequentially; they may be nearly simultaneous.

3.8.3 Benefits

According to Bodeck (1985) "When I first met Mr. Sheigo Shingo, I did not understand the enormous power of his teaching. I thought that setup was only a small aspect of the manufacturing process. But now I realise that reducing setup time is actually the key to reducing bottlenecks, lowering costs, and improving the quality of products. Setups are the most critical element of the process."

3.8.4 Conclusion

The SMED system has undergone much development in various sectors of Japanese industry, and has started to spread around the world. America's Federal-Mogul Corporation, Citroen in France, and the H. Weidmann Company in Switzerland have all used SMED to achieve substantial productivity improvements. In any country, positive results will be obtained when the theory and techniques of SMED are understood and suitably applied.

3.9 TOTAL PRODUCTIVE MAINTENANCE (TPM)

Osada (1990) was one of the founders of the Japan Plant Maintenance Association and was one of the pioneers who introduced and established Total Productive Maintenance (TPM) in Japan, transforming conventional maintenance practices into a science of management specialized for equipment maintenance.

3.9.1 What Is It ?

TPM is equipment maintenance performed on companywide basis with the dual objectives of Zero Breakdowns and Zero Defects.

Osada and Takahashi (1990) state "Today's productive maintenance has moved from conventional maintenance, to TPM, which emphasizes total participation of employees in manufacturing operations."

The following Table shows the evolution of the science of maintenance in the period 1950 to 1970.

Table 3.2 : Evolution Of The Science Of Maintenance In The Period 1950 To 1970

	<u>Preventive Maintenance</u>	<u>Productive Maintenance</u>	<u>Total Productive Maintenance</u>
E R A	<ul style="list-style-type: none"> Establishing maintenance function 	<ul style="list-style-type: none"> Recognizing importance of reliability, maintenance, and economic efficiency in plant design. 	<ul style="list-style-type: none"> Achieving PM efficiency through a comprehensive system based on respect for individuals and total employee participation.
T H E O R I E S	<ul style="list-style-type: none"> PM (Preventive Maintenance) 1951 - PM (Productive Maintenance) 1954 - MI (Maintainability Improvement) 1957 - 	<ul style="list-style-type: none"> Maintenance prevention 1960 - Reliability engineering 1962 - Maintainability engineering 1962 - Engineering economy 	<ul style="list-style-type: none"> Behavioral sciences Systems engineering Ecology Logistics

3.9.2 Implementation Aspects

The following Table 3.3 gives a step by step procedure for implementing TPM in any organisation.

Table 3.3 : Step By Step Procedure For Implementing TPM

Stage	Step	Details
Prepa-ration	1. Announce top management decision to introduce TPM.	Statement at TPM lecture in company; articles in company newspaper.
	2. Launch educational campaign to introduce TPM.	Managers : Seminars / retreats General : Presentations
	3. Create organisations to promote TPM	Form special committees at every level to promote TPM.
	4. Establish basic TPM policies and goals.	Analyse existing conditions; set goals; predict results.
	5. Formulate master plan for TPM development	Prepare detailed implementation plans for five fundamental activities
Preliminary Implemen- tation	6. Hold TPM kick-off	Invite clients, affiliated and subcontracting companies.
TPM Implemen- tation	7. Improve effectiveness of each piece of equipment.	Select model equipment; form project teams.
	8. Develop an autonomous maintenance program	Promote the Seven Steps; build diagnosis skills and establish worker certification procedure
	9. Develop a schedule maintenance program for the department.	Include periodic and predictive maintenance and spares management.
	10. Conduct training to improve operation and maintenance skills.	Train leaders together; leaders share information with group members.
	11. Develop early equipment management program	MP design (maintenance prevention):
Stabilization	12. Perfect TPM implementation and raise TPM levels	Evaluate for PM prize; set higher goals.

3.9.3 Benefits

- Equipment operation rates improve
- Costs are reduced
- Inventories are minimised
- Labour productivity increases
- There is heightened self esteem
- Increased work satisfaction

3.9.4 Conclusion

Miraculous results of TPM cannot be achieved overnight. Typically, it takes an average of three years from the introduction of TPM to achieve prize-winning results.

TPM is to be carried out by all employees through small group activities. Like TQC, which is companywide total quality control, TPM is equipment maintenance performed on a companywide basis.

3.10 CONCLUDING REMARKS

The JMPs discussed in this chapter are basically innovative approaches which can be understood by a common worker. The simplicity of Japanese methods is the only strength which has an overall appeal for diffusion and exploration. These techniques when applied in real life help in value creation and value maintenance. Further, they cannot be implemented with a superficial skill base of operating people and shallow thinking attitude of managerial staff. They need to be trained in the organisational culture to bring continuous improvement and appreciate values.

Essentially the practices described above are commonsensical principles of systematic manufacturing, not the same as principles developed in the west. These approaches have been successful in Japan because of its cultural homogeneity bounded by the teachings of Buddhism. India, belonging to same oriental cluster and having generated the very principles of Buddhism, why can't Japanese management practices be successful in Indian organisations ?

CHAPTER IV

A REVIEW OF APPLICATION OF JAPANESE MANAGEMENT PRACTICES TO DIFFERENT INTERNATIONAL SETTINGS

A REVIEW OF APPLICATION OF JAPANESE MANAGEMENT PRACTICES TO DIFFERENT INTERNATIONAL SETTINGS

4.1 INTRODUCTION

The diffusion of Japanese Management Practices in different international settings such as Australia, U.S., Malaysia, U.K., Brazil and New South Wales has been reviewed in this chapter.

In undertaking a review of literature relating to JMPs in international context we could find very little literature in most of the referred journals of Management. However, to construct JMPs as the reference paradigm it is necessary to attempt to study its diffusion in international settings.

Specifically we will be looking at paradigm shifts in Management and organisation over the past one decade, with regard to the transferability of the Japanese model.

Flexible automation based on microprocessor technology reduced economies of 'scale' and introduced economies of 'scope'. (Morris and Wilkinson, 1995). Kern and Schumann (1984, 1987), argue that 'new production strategies' mark a fundamental break with Taylorism and a re-emergence of the importance of labour in the production process. Taylorism, and its associated lack of autonomy, deskilling, and central production control, is replaced by labour-reskilled, retrained and given core production responsibilities.

Thus, there is a blurring of the distinction between large and small batch production, and hence firms are no longer faced with a choice between mass or craft production, but can engage in both. More importantly, they now have the option of high volume production of customized quality-competitive goods, i.e. 'diversified quality production'. (Sorge and Streck, 1988).

Contrasts between Japanese production systems and human relations ideals have similarly been found by other critics. For instance Delbridge et al (1992) argue that the reality in Japanese companies is work intensification through waste elimination and tight manning, and Swell and Wilkinson (1992) document the imposition of tight management control through surveillance and strict discipline. From a critical perspective, the 'teams' take on some of the responsibilities of the ideal autonomous work group, but emphatically do not enjoy the rights.

The optimists and advocates talk of 'worker empowerment', emphasizing multi-skilling, job rotation, teamwork and employee involvement through quality circles and kaizen groups, as an integral part of the socio-technical system. Blue-collar workers are given the same status as white-collars (reflected symbolically in single status facilities) and the supervisor becomes 'team leader' with responsibilities and authority which in British or American organizations would be the preserve of staff specialists or higher managers (Wickens, 1987).

4.2 A NOTE ON THE JAPANESE INSTITUTIONAL ENVIRONMENT

According to Dohse et al. (1988) the Japanese production paradigm was able to emerge, and must be understood in the context of, a unique institutional environment which gave rise to the 'three treasures' of lifetime employment, enterprise unions, and seniority systems of pay and promotion.

From the institutionalist perspective, then, the transfer of the Japanese production system to an alien environment would likely prove to be highly problematic.

For instance Tabata (1989) and Yamamoto (1990), in documenting the details of employee relations at Toyota and Toshiba in Japan, uncover rather different practices to those which might be suggested from company slogans. In both cases there is an extremely powerful management, largely unchallenged by the enterprise union, which exerts detailed control over employee behaviour. At Toshiba, Yamamoto documents the training of supervisors in techniques of identifying and dealing with 'troublemakers' and 'problematic persons', including tailing suspects outside the workplace. 'Problematic persons' include those who 'take all available paid holiday' or 'insist on the exercise of their rights'. They are dealt with through a 'preventive' approach (mainly counselling) or if necessary through 'surgical, direct treatment' (strong negative sanctions). Hence, as Sullivan (1992, p. 72) puts it: 'What looks like loyalty in Japan is often really submission to inevitable and not easily assailed managerial power.'

The paramount issue here is that the personnel and industrial relations practices identified in Japan - one of the 'three treasures' - are more likely to be found in the large firm segment, and moreover, to be restricted to a core element of the workforce within that segment.

The other two treasures - lifetime employment and seniority-based wage systems (*nenko*) - are even more exclusive. Not only are they less likely to apply outside the large firm sector, but they are restricted within it to core employees; thus they are denied to part-time, temporary and other categories of employees. The 'three treasures' are therefore confined to a segment of the workforce in the large firm sector. The most optimistic estimate of the percentage of Japanese workers covered by lifetime employment, for example, is 35 percent, and the lowest is 10 percent (Moore, 1987). Moreover, there is evidence of a gradual dilution of lifetime employment and the seniority wage system over the past few years.

The importance of historical and political context is emphasized by Humphrey (1995), who explores the potential for the diffusion of JIT/TQC production systems in Brazilian manufacturing. Some aspects of JIT/TQC have been successfully introduced in spite of an 'alien environment'. Kenney and Florida (1992) on the other hand find an institutional environment in the USA amenable to Japanese employment practices, but only with great effort and determination on the part of the Japanese auto transplants' managements.

Resistance to Japanese production methods was noted among some managers by Kenney and Florida (1992), and Humphrey (1995), and among workers through outbreaks of mass

hysteria (this being the only apparent legitimate means of expression of collective resistance in Malaysia) by Abdullah and Keenoy (1995). Delbridge (1992), noting the absence of overt resistance to JIT/TQC production systems introduced by Japanese companies to the UK, conducted a participant observation study to seek out informal means of worker counter control. These turned out to be extremely limited, and the picture he documents is one of near complete management control.

However, Iwata (1992) maintains that Japanese style management has traditionally possessed a dual structure comprising of a core and a periphery. The basic form of the structure has been maintained to date. Western organisations can be seen as institutions where a handful of top executives comprise the core while in Japanese companies the core has been gradually expanding with time.

4.3 AUSTRALIA

4.3.1 Introduction

Japanese management practices have found a substantial base in Australia. Dedoussis (1990) feels that the view shared by the vast majority of business leaders, policy makers and the leadership of the union movement is that the introduction of new practices in HRM (Human Resources Management) is imperative if Australian industry is to become internationally competitive. In contrast to long established employment and labour practices, which are often blamed for the inefficiency in Australian industry and decline in the country's economic position, the new practices have been closely associated with the strong performance of some east Asian economies, notably Japan.

Dedoussis (1990, 1993) outlines the methodology as follows : Between 1986 and 1990 case studies on HRM practices were conducted in nine Japanese manufacturing firms established in Australia. Of the firms researched, Matsushita and Sanyo are in the consumer electronics industry, Toyota and Nippondenso are in the motor vehicle industry, Canobolas and Lachlan are in the wool scouring and top making industry. Hoya, produces optical lenses, NEC is a manufacturer of telecommunications equipment, and Daikin is an assembler and distributor of air conditioning systems. Information and data on HRM practices were collected mainly by interviewing managers, employees and union representatives.

The findings reported are as outlined below.

- i) Recruitment focuses on candidates in the 35-40 age group who are hired directly according to demands of each firm. Work experience is highly valued while formal educational qualifications. However, formal educational qualifications are important in the case of candidates for managerial positions in bigger firms.
- ii) Recruitment at NEC focuses on the 25-30 age group as candidates in this age are considered less likely to leave than younger employees and yet be adaptable enough.
- iii) Teamwork and adaptability are important in bigger firms, for example NEC and Toyota, as operations are quite complex and tasks are often allocated to teams of employees.
- iv) In order to cope with the problem of high employee turnover rates most firms thoroughly scrutinize the background of candidates by means of reference checks and interviews.

4.3.2 Some Key Features of Australian Adaptation

- i) Training : In the early stages of operations in Australia, blue collar employees were trained on the job by personnel despatched from parent companies, while changes in production methods and in the organizational structure at Sanyo and Matsushita were accompanied by renewed emphasis on internal training. NEC spends 2.83 percent of wages/salaries on training and the figure for Toyota is above 2 percent. NEC and Toyota are the only firms with established training sections and full time training personnel.
- ii) Job Rotation : In bigger firms such as Nippondenso, NEC and Toyota, planned job rotation takes place every six to eight months, while programmes for white collar employees are virtually non-existent with the exception of NEC which practices limited job rotation.
- iii) Job Assignment and Work Groups : With the exception of Matsushita and Sanyo job descriptions are absent while there is emphasis on the performance of tasks as required by the demands of production. Toyota reduced its 42 job classifications in ten groups to three broad skill levels. Work groups of approximately ten employees are used at Matsushita, NEC, Nippondenso and Toyota. It may be noted, however, that the practice of multi skilling and work groups do not apply to white collar employees.
- iv) Promotion : The policy in all firms is to rely on internal promotion for shop floor vacancies. Managerial and administrative vacancies are filled mostly by internal promotion in larger firms, while a dual policy of relying on internal promotion and external recruitment for white collar vacancies exists in smaller firms.

Internally promoted blue collar employees and managers have an above average length of service record in most firms. This suggests that the length of service record plays a crucial role in promotion.

- v) Decision Making : Management philosophy and corporate objectives have been formally established at Matsushita, NEC and Toyota, where information is disseminated to employees on a regular basis. The flow of communications in most firms tends to be one way, that is top down.

Australian managers have limited involvement in the decision making process and they are often required to implement decisions which were made without much consultation and input on their part.

It appears that the practice of bottom-up decision making aims primarily at enlisting the support of Australian managers in the decision making process rather than delegating authority to them.

- vi) Small Group Activities : Although all firms had attempted to introduce small group activities including quality control circles and suggestion schemes, such initiatives were still present at Nippondenso, NEC and Toyota. The collapse of small group activities can be attributed to poor planning and implementation, lack of support by local managers and supervisors as well as high employee turnover rates.

The average life span of quality circles was approximately two years at NEC and Toyota.

- vii) Security of Employment : Improvement in the market position of NEC, Nippondenso and Toyota over the last few years has been accompanied by the steady increase in employment levels and the absence of any retrenchments.

4.3.3 Conclusion

The following remarks are worth mentioning :

- i) Large-scale Japanese corporations seek to increase their affiliations with smaller firms and integrate subcontractors into a total operation transcending the boundaries of single firms.
- ii) The increasing use of subcontractors and spinning off production activities to subsidiaries allows management to trim the workforce and keep employees as homogeneous as possible in terms of employment conditions and career thus facilitating the practice of HRM at the enterprise level.
- iii) On the other hand, however, key elements of the Japanese management system - including seniority wages and promotion and the company sponsored welfare system are either absent or only partly transferred into overseas subsidiaries.

- iv) In substance HRM in overseas Japanese firms will be characterized by the introduction of relatively low-cost practices which can offer immediate and distinct advantages to the organization. Such low cost practices include job rotation, internal promotion, small group activities, flexibility in job assignments, and open lines of communications.
- v) On the other hand, high cost practices, such as tenured employment, seniority wages and company welfarism, will be generally absent given the nature of many overseas subsidiaries that effectively operate as sub-contractors to parent companies in Japan. It may be pointed out that such high cost practices are also absent among smaller firms and subcontractors in Japan.

4.4 MALAYSIA

4.4.1 Introduction

Abdullah & Keenoy (1995) report two case studies from Malaysia. They have defined the Japanese Management Systems in terms of practices designed to generate and underpin collective employee loyalty and commitment. These include uniform for all employees, collective physical exercise, company songs, same working hours, common cafeteria etc. Mechanism to generate collective responsibility include quality circles, ringi process of consultative decision making, suggestion schemes, use of Kaizen process, mechanism designed to minimize employee mobility, seniority wages, career long training through job rotation. In addition company sponsored sports, recreational and leisure activities to construct and reinforce social and economic relations. The syndrome, of late, includes an emphasis on the 'distinctive' Japanese systems of cost minimization and quality maximization such as just-in-time/kanban production and inventory mechanisms and total quality management programmes (Kenney and Florida, 1993; Oliver and Wilkinson, 1992; Womack et al., 1990).

4.4.2 Some Key Features of Malaysian Adaptation

- i) In company 'A', Head Quarters in Japan, in the electronic sector, with 2500 employees, with majority processes labour intensive, following features emerged.

[Source Abdullah & Keenoy (1995)]

- a) Management by consensus - a distinctive feature of Japanese industrial organisation.
- b) Mutuality of goals emphasised by the company credo - "the growth of the corporation also contributes to the material and spiritual growth of the employees".
- c) Extensive induction programme for new employees.
- d) Employment (long term) is for 65-70% of the manning required - rest is met through overtime and temporary employment.

- e) There is evidence that management worked very hard to mould union representatives to their way of thinking.
- ii) Company 'B', Head quarter in Japan, with 90% Malaysian investment, employing 2000 people having labour intensive assembly operations. In this case following distinctive features emerged.
- a) Non-union company with the high emphasis on discipline; before starting work employees have to perform physical exercise while reciting the company mottos.
 - b) Extensive selection and induction programmes. Incumbents are tested for pro-union leanings. Supervision is regarded as the first line of defence against unionisation.
 - c) The company makes every effort to project image of being a caring employer and tries hard to stave off any attempt towards unionisation.
 - d) As a last resort a "Joint Consultative Committee" (JLC) was formed with elected representatives from the work force. This seems to be working quite well now.

4.4.3 Implications

In addition to three core elements of Japanese Management practices, namely, lifetime employment, seniority wages, and company unionism (Dore, 1973, Ouchi, 1981, Pascale and Athos 1981), a number of subsidiary practices have been observed to have been employed. They include :

- i) Single status terms and conditions of employment like joint physical exercise, common cafeterias, etc.
- ii) Collective decision making - Ringi, Kaizen, Suggestion schemes, etc.
- iii) Job Rotation
- iv) Mechanism to cement relations between organisational members like company sponsored sports etc.

4.4.4 Conclusion

It appears in conclusion that transfer of the Japanese system is not in itself a strategic business objective but a process which is contingent on the prevailing legal, economic and cultural and political concept. The case studies prove that what has been transferred is a significantly diluted partial version of the Japanese Management Syndrome.

4.5 BRAZIL

4.5.1 Introduction

Humphrey (1995) has vividly described the phenomenon of transferability to Brazilian settings. Changing competitive conditions in Brazilian industry are making companies to seek JIMs as a means of rapidly raising productivity and quality.

Case studies of firms in motor component industry show that Brazil could make radical changes in their production systems and overcome deficiencies as regards educational levels and industrial relations practices.

Brazil has always been one of the leading exponents of JIT and TQM in Latin America.

4.5.2 Some Key Features of Brazilian Adaptation

- i) Viewing JIT/TQM as an industrial model implies that a changing production system should be reflected in changing employment relations. These should reflect the need for flexibility, multi skilling and teamwork, and at the same time incorporate new mechanisms for labour motivation and control. The combination of seniority based wages and promotion, lifetime employment and a company union system for core workers and the exclusion of part-time, casual and seasonal workers from this core together with workers in smaller companies, provide Japanese firms with both a committed and functionally flexible core labour force and access to cheap labour and numerical flexibility.
- ii) The 'industrial model' to which firms look as they meet this challenge is clearly the Japanese system, defined in terms of JIT/TQM. Clearly, there are many aspects to introducing this model. Labour is just one issue, but an important one. There are good reasons to suppose that securing labour's active participation in the new working practices is difficult. Two main problems stand out. The first concerns poor levels of education and training, the second a history of poor labour relations.

Low levels of education and training have been identified as a serious problem in many studies of Brazilian firms.

Poor labour relations have also been seen as an obstacle to JIT/TQM. As Posthuma (1991) found in two cases where management introduced SPC, workers were too habituated to a culture of blame and punishment to report defects or make suggestions for improvement.

- iii) The introduction of Japanese methods would appear to require a major change in relations between management and labour. The failure of the first wave of Japanese experimentation, quality circles, in the early 1980s provided evidence of how difficult it might be to introduce innovations.

Humphrey (1995) argues that Japanese methods would have to be considerably adapted if they were to take root in Brazil and suggested that Brazilian firms would favour adaptations which reduced reliance on direct production workers because of the antagonistic relations between labour and management.

The introduction of JIT/TQC involves a major shift in the attitudes of Brazilian firms to education and training. In the past, firms tended to hire poorly educated labour and provide little formal training for those in basic production jobs.

Firms need workers with a good basic education. A technically oriented education is less important than one which provides workers with the ability to read and write, follow instructions, communicate and discuss ideas and respond to training. Training in the plant is not a substitute for a basic education (Humphrey, 1995)

4.5.3 Conclusion

The enthusiasm for JIT/TQM in Brazil has clearly been matched by managerial practice in leading firms. It is not just hot air or consultancy fad. The extent of the transformation in production and labour relations is considerable, and there is no doubt that trade liberalization has driven the process forward. It also seems likely that equally fundamental shifts are beginning to take place in other areas, such as design and supplier relations. In some companies, at least, there are clear signs of a systemic transformation of company activities towards a JIT/TQM system.

4.6 U.S.A.

4.6.1 Introduction

This section of the chapter is divided into three parts :

First part deals with behavioural aspects of American managers in a Japanese Management environment and reference is drawn for the purpose from a number of Phd. Thesis from American Universities.

Second part deals with specific Japanese transplants in the autos and the electronics sectors - focussing on the industrial relations and cultural aspects of Japanese Management practices diffusion.

Third part focusses on the typical American manager's and Japanese manager's style of functioning, to bring out, the importance of the leadership style in the diffusion of JIMs.

4.6.2 Behavioural Aspects Of American Managers

Work done by Deborah (1992) suggests that employees in Japanese owned companies in the US, experienced significantly greater occupational stress than those of American owned and managed companies.

Further Besser Lee (1991) reports that "Commonality of Fate" binds the three sub-teams of a Japanese organisation in the US namely work teams, campus teams and the corporate teams with equitable award sharing when organisational goals are achieved.

There is a diametrical opposite finding by Dennis Laurie (1990) who calls Americans working for Japanese companies as "Yankee Samurai". Dennis conferred that in his study,

Japanese did not employ their home management styles among the Americans. They did not, because they could not; the cultures are too different. He continues: "Although there was mutual friendliness and respect communication was difficult because the Americans and Japanese seldom socialised with one another. A dual organisational structure was often observed; one American and the other Japanese. He concludes saying "If America is to compete in the 21st century it must look into its culture".

This aspect is taken care of in the proposed model of adaptation (Chapter-IX) in alien environments through the aspect of awareness building and aligning everyone on the superordinate goal of the organisation.

Hall (1990), in a study of American owned banks in California, reports that Japanese owned bank employees felt that their current job security policy is much better than the previous bank where they worked. In addition American owned banks have now extensive training programmes and use participation in decision making more than the Japanese counterparts. Commitment and obedience were among the most prominent corporate values for Japanese owned banks whereas personal initiative and ambition were valued in American owned banks. Finally no difference was found between Japanese and American owned banks in terms of organisational commitment and job involvement.

The above findings gain significance in the aspect of "travel" of JMPs to cross cultural settings. Cognisance of the above findings are taken up in Chapter IX of this thesis while suggesting a model for adaptation in India.

Ahmed (1981) confirmed after a survey of 30 American and Japanese businesses that Socio cultural background, including religious belief were found significant with Japanese Managers. They also placed more importance on family background and loyalty. The American group reflected a greater stress on competitiveness and concern for business and Govt. through legislation and encouragement. The Japanese respondents tend to assign slightly greater importance to centrally planned economy, price subsidies and guaranteed loans to businesses.

Another important finding by Dunlap (1987) is "Americans need stronger educational support to succeed in the Japanese environment and Japanese consider continuous learning to be everyone's responsibility".

Maling (1986), after his studies states that Japanese approach to quality management can be successfully implemented in the US and its benefits are substantially greater than the traditional US approach and can improve production and productivity of US manufacturing firms.

4.6.3 Specific Japanese Transplants In The Autos And The Electronic Sectors

Kenney and Florida (1995) state categorically that the Japanese industry is characterised by a unique set of industrial relations - transfer is possible but this occurs only when Japanese managers make a confident and sustained effort to implant their system.

4.6.4 Some Key Features Of American Adaptation

There are now nine Japanese US joint venture auto assembly plants in the USA. All of these plants have attempted to introduce Japanese style production and management systems (Florida and Kenney, 1995).

The most fundamental building block of Japanese production is the team. Each automotive transplant has organized its production activities on the basis of teams. At Honda, Toyota and Nummi teams meet daily to discuss production improvements and redesign of tasks. At NUMMI each team has its own team room adjacent to the production line where workers meet.

Team leaders are a key job category at all the assembly transplants. Team leaders are members of shop floor work groups but also have managerial responsibility for immediate production activities.

The transplants encourage worker self initiative through the delegation of managerial authority and responsibility to shop floor workers and to reduce the incidences of repetitive motion injury.

The transplants organize work on the basis of just a few job classifications. This has an important dimension when multiskilling people.

In most transplants workers and managers eat in the same cafeteria. Similarly, managers typically do not have walled offices but sit at desks in a large open common office adjacent to the production facility.

The assembly transplants use Japanese style suggestion systems to harness workers' knowledge and ideas. Honda and Toyota have fairly well developed suggestion systems.

Quality circle activities are an important element of the Japanese system. In Japan, QC activities are comprised of groups of workers who devote effort outside regular work to improving an element of the production process. The transplants vary as to the extent and intensiveness with which they employ QC activities.

A crucial feature of Japanese manufacturing success has been kaizen (continuous improvement) activities. The progress of the transplants on this dimension is remarkable, given that they have had to stabilize the production process sufficiently to implement these activities and to train American workers.

The transplants also exert strong control to ensure that employees work the entire day. Tardiness or leaving early are considered as serious as absence. Absence is a serious issue in Japanese operated plants because there are no replacement workers - the team must cover for the absent worker. Thus far, shop floor workers have experienced few problems adapting to the Japanese system.

Interestingly, management has been an important source of recurring adaptation problems.

American middle managers were repeatedly mentioned as having great difficulty in taking orders from foreign nationals and understanding the importance of shop floor workers. In recognition of this problem, Japanese managers have begun promoting shop floor workers to lower level supervisory positions and grooming some of them for top level positions.

One firm found it necessary to increase the number of job classifications and create an internal career ladder to cope with dissatisfaction on the part of American workers. However, often Japanese managers have actively resisted this move toward greater Americanization.

Most transplant electronics facilities have not implemented QC activities, Kaizen, or other worker improvement initiatives. However, once again, there are exceptions, for example, Sony has successfully implemented a suggestion system and QC programme.

Generally speaking, the Japanese electronics transplants have not implemented the Japanese system of work and production organization. At most, the current system is a hybrid of Japanese and American characteristics. Japanese managers consider shop floor workers as both more reliable and more stable than American managers. This is roughly in line with the Japanese practice whereby shop floor workers can be promoted to production management positions.

4.6.5 A Contrast Between An American Manager's And Japanese Manager's Style Of Functioning

In this section we attempt to understand the differences in the style of management followed by a typical American manager, (Chairman of International Telephone and Telegraph, Mr. Harold Geneen) and a Japanese manager (Chairman of Matsushita, Mr. Konosuke Matsushita).

The prime objective of taking up the characteristics of one Japanese CEO v/s one American CEO, has been mainly to point out the impact of leadership style on the functioning of the organisation. Both the organisations covered viz. ITT (American) and Matsushita (Japanese) have very similar sales turnovers and both the CEOs have been heralded as most successful corporate managers in their respective countries. While one example is not enough to make a generalisation, Japanese history is replete with exemplary personalities like Akio Moriata (Sony), who had very similar ways of managing like Matsushita. The objective is to bring out the impact of leadership style on the functioning of an organisation and the sharp contrast between Japanese and rest of the world in terms of management approaches.

- (1) Both ITT and Matsushita share a common base in electrical and electronic fields. ITT is a highly diversified conglomerate whereas Matsushita has mainly concentrated on its electrical and electronic core. Total revenues are very much similar - Matsushita with \$10 billion and \$11.8 billion for ITT. Work force of ITT (350,000 employees) is greater than that of Matsushita (200,000 employees).

Harold Geneen and Konosuke Matsushita were both heralded as master corporate managers in their respective countries.

One characteristic of American corporations is that the personalities of the CEO's stand out. They leave a personal imprint whereas in the Japanese organisations, even the strongest managers tend to blend in with the institution. It is therefore a noticeable point that we are drawn to the characteristics of the institution where Matsushita is concerned. We end up discussing Harold Geneen when examining ITT.

- (2) Harold S. Geneen managed International Telephone and Telegraph (ITT) for nearly 2 decades. His success at meeting bottom line goals was remarkable and he fashioned the firm to meet all his goals. However, the company he developed could not long withstand his departure. He did not build a great corporation that achieves multiple goals and persists successfully but he built a profitable corporate entity that was apparently dependent upon himself. This was no small achievement. However, this example dramatically illustrates the American approach to management which is assumed to partly account for the trouble that most American firms are in.
- (3) Both Matsushita & Geneen had remarkable memory powers, being able to remember and recall facts & figures over several years, at will. Geneen believed that decision making was the toughest job of a manager and to make the right decision, the right facts were a must.

An unshakeable fact is something hard and indisputable. At minimum, it is the first hand opinion of an expert based on the most current information.

A highly detailed planning and control system was evolved. Weekly, monthly and yearly reports measured progress. He had the ability to make people say that "by doing "this" production would increase by 25% and profits by 12%". Then he made them live up to their forecast by running according to the plan.

Once he decided upon a course of action in a project, he expected his subordinates to go to great lengths to bring the plan to fruition. He did not take "NO" for an answer.

- (4) At ITT managerial talent tended to be "purchased" from the market and plugged in where necessary; unlike Matsushita which nurtured and carefully socialised all its managerial candidates.
- (5) "Task forces " or "action assignments " squads were created whenever a problem arose or even a suspicion of a problem came up. These task forces had a lot of power and slashed across the entire company. They were expected to get the causes and supply solutions to problems.

At Matsushita, SGIA or small group involvement activity was in vogue which was voluntary by nature.

- (6) Geneen's high bonus and incentive policy led to tensions between line and staff. This was because each of them tried to look good in their reports - demonstrating how

many costs they cut, profits they gained and line management errors that they corrected.

Executives were expected to be accessible 24 hours a day, seven days a week. They were expected to put family and social life after the company's interests. The firm always came first.

Geneen believed in hiring the right kind of people for the required job. Those not required were either "laid off" or fired. The managers were constantly under tremendous pressure but always well paid, more than the market rate by 21%.

He was highly people conscious.

When Geneen retired in 1979, there was no one who could replace him and the fortunes of the company dwindled and the company fell in stature.

4.6.6 Implications

A great manager is one who makes use of and implements all the seven 'S's in his company. These 7 'S's are listed below :

HARD 'S's :

1. STRATEGY - Plan or course of action leading to the allocation of a firm's scarce resources, to reach identified goals.
2. STRUCTURE - Characterisation of the organisation chart.
3. SYSTEMS - Proceduralised reports and routinized processes such as meeting formats.

SOFT 'S's :

4. STAFF - Demographic description of important personnel categories within the firm (i.e. engineers, MBAs etc.)
5. STYLE - Characterisation of how key-managers behave in achieving the organisation goals, also the cultural style of the organisation.
6. SKILLS - Distinctive capabilities of key personnel or the firm as a whole.
7. SUPER ORDINATE GOALS - The significant meanings or guiding concepts that an organisation imbibes in its members.

The hard 'S's are most commonly seen in American corporations and organisations. There is a general tendency to overlook or neglect the implementation or the realization of the soft 'S's. Most Japanese corporations give equal emphasis on both the hard and soft 'S's, and are thereby found to be leading the Americans in most managerial and

organisational fields. It is therefore seen that the Japanese way makes possible great corporations that successfully persist in harmony with their deepest values.

4.6.7 Conclusion

The question of the transfer of Japanese management style is far more complicated than it first appears.

There are also some general observations about Japanese firms operating in the USA that can be made. The first is that manufacturing is usually controlled by a Japanese despatchee.

Second, marketing and human resource issues are usually managed by US nationals. Third, US management staff will often try to re-establish the class lines that characterize the blue-collar/white-collar divide. Fourth, generally the start-up period is crucial and it is at this point that the Japanese system must be implemented immediately and massively.

In conclusion, in many cases the Japanese management systems have been transferred to and are operating in the USA successfully. However, this occurred only in cases in which there was a significant investment of managerial talent by the parent firm.

Japanese management will work in the USA, but it is by no means natural. It requires active effort to resist the prevailing environment and successfully complete the transfer process.

4.7 U.K.

4.7.1 Introduction

The post second world war economic boom and the onset of recession intensified the concern of politicians, managers and others with the relatively poor performance of the British economy and the productivity levels of British industry. As many companies struggled to survive in an increasingly competitive international environment attention in this country and elsewhere came to be focussed on the so called Japanese economic 'miracle'. More over, if anything, the interest in the 'secret' of Japan's industrial success was further heightened due to the relative ease with which Japanese companies were able to withstand the worst shocks. The employment and production practices found in Japanese companies have thus become the focus of scrutiny and investigation with a view to gleaning any lessons which can be learnt in order to emulate Japanese success.

Dore (1973), feels that the Japanese management style has more to do with particular solutions to a range of adverse conditions facing industry (demographic, dependence on raw material and energy resource imports) and the capacity to modernise through highly selective absorption and adaptation of technology.

4.7.2 Some Key Features Of U.K. Adaptation

- i) Rick Delbridge's (1995) studies in a Japanese owned consumer electronic plant sited in England show the style and extent of management control and worker behaviour, and the nature of workplace relations at the plant. He found that the incorporation of just-in-time (JIT) and total quality management (TQM) into clearly defined management objectives had allowed a visible complete combination of the control of labour with management's economic goals. Worker resistance and 'misbehaviour' persisted, but in ways which were increasingly fragmentary and marginal.
- ii) Japanese Management Systems have widespread implications at micro as well as macro level. The adoption of the JIT/TQM factory system represents an opportunity for managers to intensify work and to extend the frontiers of control through increased surveillance, heightened responsibility and accountability. the harnessing of peer pressure to perform to management dictates, and the fostering of employee involvement in waste elimination and continuous improvement programmes (Delbridge et al., 1992).
- iii) A great deal has been written about Japan's industrial system but there are very few accounts detailing workers' experiences at shop floor level. The JIT/TQM system allows management to clarify workplace relations and to more completely combine is objective of the control of labour with economic objectives. In effect, workers are forced toward surviving rather than resisting their exploitation. This is especially the situation in the UK environment when workers are represented by a single union agreement under which they have very few rights and in a context where the expectations of union influence are so low.
- iv) The overriding imperative under JIT/TQM production is to meet the exact output level with zero defects in accordance with customer requirements.
- v) The external environment, and how this is understood by workers, is evidently important in this and Nippon CTVs management expend considerable time and resources on communicating the link between customer satisfaction and worker's own jobs.

4.7.3 Implications

- i) The informal work group of traditional organizations is now largely under managerial control in the team system (Rehder, 1990) which arguably brings further potential problems for workers (Parker and Slaughter, 1988). Research evidence suggests that workers are increasingly restricted in finding ways of resisting management control that are beneficial.
- ii) Ackroyd S. et al (1988) states that the emphasis now being placed by the Japanese and many Western firms on continuous improvement throws the focus on the need for a seamless extension of training and skill development of the entire labour force, and for the development of a participative culture through which the labour force can become involved in process and product improvements.
- iii) Training, may occur on a full-time basis (classroom training) (the French model), on a dual basis (the German system) or within the place of employment (a system frequently utilized in Japan). Generally the discussion of human resources development tends to complement education and training, but in the context of flexible production it has become necessary to separate out education and training since they represent different arenas of policy making.
- iv) As a range of techniques are introduced, the requirements for formal education tend to grow. (These educational demands can often be overestimated; for example, workers in some of these Zimbabwean firms were able to utilize both Ishikawa fish diagrams and Pareto diagrams.) Moreover, as workers become more involved in processes of continuous improvement, it is likely that they will be aided by a greater understanding of underlying technical processes which in turn, is likely to be assisted by the depth of formal education. In the long run, therefore, as the Japanese clearly believe, formal education is an important adjunct to the systematic utilization of Japanese management techniques even though in the short run continual progress can be made with low levels of literacy on the shop-floor.
- v) In less developed countries that the educational and training barriers to entry for the application of individual Japanese management techniques are often negligible. Second, training -- generally intrafirm -- appears to be more important than formal education in the successful utilization of these techniques.

4.7.4 A Note On 'Japanisation' In The U.K.

In order to understand the implications of Japanese techniques diffusion in the U.K. it is necessary to look at Japanisation (Ackroyd S. et al, 1988).

- 1) Penetration of the British economy and industry by Japanese firms. We may call this 'direct Japanisation'. At present, the penetration is still in its infancy. One authority, investigating the impact of Japanese manufacturing affiliates, calculated that at the end of March 1984 the UK accounted for only about 4% of the cumulative overseas

investment of Japanese manufacturing companies. Whilst, this is more than any other country in Europe, it falls well short of the USA (with 27%).

- 2) There is more or less deliberate or overt copying of Japanese policies and practices by British firms and organisations. We refer to this as 'mediated Japanisation'. British companies having recognised the need for change, have sought to incorporate what they perceive as the best of Japanese practices and to integrate the new with the old in appropriate ways, and in a manner which produces the minimum of conflict and disruption while on the other hand some have preferred to introduce selective changes as is evident in the spread of so called 'quality circles', and enhanced flexibility, both numerical and functional, amongst employees. Still others have opted for more comprehensive changes encompassing both employment and working practices. One of the better known examples of the latter would be the change programme undertaken at Jaguar. A recent figure cited has 400-500 Quality circles operating in the UK (compared to over 1 million in Japan).
- 3) In certain cases, British economy is actually reproducing Japanese forms of economic structure as well as other, less central aspects of business organisation, such as production procedures and employment relations. This we may call as 'permeated or full Japanisation'

One of the key differences between the UK and Japan at the organizational level is the lack of integration between banking and other financial institutions and those of manufacturing firms. Finance capitals, are highly developed in the UK, but not oriented towards the needs and concerns of manufacturing industry. British banks do not provide the long-term, low interest loans which are available from Japanese banks. Nor is the scale of their funding of industry impressive by international standards. It has been estimated, that about forty four percent of capital for industrial investment in Japan is drawn from such sources. Whilst the comparable figure for the UK is just six percent.

4.7.5 Conclusion

What the British are doing today is not Japanisation in any simple sense, but attempting to adapt to changed economic conditions without relinquishing established bases of profit, power and influence. To this extent the direct penetration of the British economy by Japanese firms is commonly seen to have a significance well out of proportion to its actual scale.

This does not, of course, mean that the British economy will deal as effectively with the economic threat of the Japanese as the Japanese did themselves with the economic imperialism of the West. The longer term outcome of the processes involved are by no means predictable at the moment.

4.8 NEW SOUTH WALES

4.8.1 Introduction

It is seen that Japanese firms of manufacturing organisations has been recreated on the Welsh soil which means that JIMs can travel far and wide in any alien country with success.

WILKINSON, MORRIS and MUNDAY (1992), in a recent survey on the status of Japanisation in Wales, found the usage of the Japanese form of production organisation in 22 firms as shown below :

Table 4.1 : Use of Japanese Form of Production Organisation
(Source : Wilkinson et al 1992)

JIT	15
KANBAN	5
SPC	12
QC	11
KAIZEN	5
TEAM BASED ORGANISATION	18

4.8.2 Some Key Features of New South Wales Adaptation

- i) In almost all cases work in progress (WIP) and stocks were strictly monitored and controlled, typically goods were 'pulled' through the factory on the basis of production schedules derived from final customer demand, and teams of workers within the factory were encouraged to conceive of downstream workers as their customers. Within plants, there were typically negligible or no stocks within processes, and stocks ranging from an hour to two days between processes - e.g. sub-assembly and final assembly.
- ii) Shop-floor workers were mostly organized into teams of around 15 to 40 members, each team having a clearly defined responsibility for meeting production and quality targets, and their performance being closely monitored and constantly improved upon.
- iii) With very tight manning policies team leaders are faced at the start of every shift with the problem of allocating tasks among employees. Another means of coping with the absence or lateness is the 'float', (sometimes the team leader has to take a place on the production line). Typically, there is around one float per ten employees.

- iv) Drives and campaigns to improve efficiency, reduce waste, and improve quality, are commonplace, often with specific targets set for teams or departments. Achievements against targets are displayed on factory walls and communicated through briefings and company newsletters. The kaizen philosophy is not something any organizational member could easily ignore.

4.8.3 Implications

- i) Quality circles wherever installed were making operators and teams responsible and accountable for the quality of their work under a 'right first time' philosophy.
- ii) The team organization, based around production lines, dedicated to the production of a component family or the final assembly of a family of products, under the control of a team leader, supported by a small number of multi skilled 'floats' had their own responsibility for monitoring, documenting and displaying their productivity and quality performances against targets set. This set off a chain reaction of positive reinforcement.
- iii) A whole range of measures such as counselling, retraining and redeployment were attempted before dismissal, thereby implying that discipline was corrective rather than merely punitive.
- iv) While employee performances were very closely monitored, management's investment in human resources meant concern for employees' development in terms of improving individuals' capabilities.

4.8.4 Conclusion

Japanese form of manufacturing organisation has been recreated on the Welsh Soil, and that any adaptations are not such as to alter the fabric of the new organisational form (Wilkinson et al, 1995). This argues well with the mediated Japanisation of the U.K. Ackroyd S. et al (1988). Also it proposes that Japanese Management Systems can travel far and wide to any alien country setting with success.

4.9 CONCLUDING REMARKS

From the comparative analysis of all the country cases reviewed in the chapter, the following may be concluded :

- a) Commitment of senior managers in terms of time and effort.
- b) Development of all round and cross functional competencies among employees.
- c) Strategic orientation on continuous HRD.
- d) Continuous emphasis on simultaneous improvement in quality and productivity.
- e) Individual effectiveness v/s team working - The 'team element' comes out very strongly in Japan while individual creativity and result orientation seem to be prevalent in the West.

- f) Respect for tradition is a distinct cultural phenomenon both in Japan and in India.
- g) Conformity v/s Uniqueness : Conformity and regimentation as a value is prevalent in Japan whereas uniqueness or individuality is recognised in the West.
- h) Social openness : Visitors and workers in both Japan and the West have confirmed the high degree of 'social openness' and social interaction in the West.

From the Indian standpoint there are certain differences between Japanese and Indian Management Practices and Work Culture. They are as follows :

INDIA	JAPAN
Multi-layer Hierarchy	Fewer Levels
Distortion in communication	Informal dealings
Selective Feedback	Faster Feedback
Individual Excellence	Team Spirit
Inter-Team and Intra-Team conflicts come in the way	Inter-Team collaboration high
Loyalty to boss some times takes precedence.	A hardworking person is respected and honoured.
Rotation now has become vogue	Flexible roles Job Rotation
Emphasis on training begun in 80s (<2% of employees' time)	Emphasis on training (5% of employees' time)

The following imperative emerge from the foregoing discussion :

- a) Delaying the organisation.
- b) Upskilling and reskilling the workforce through investment in training and development.
- c) Reengineering the business processes for value addition.
- d) Taking initiative in exploratory projects for learning and experimentation.

Current international comparisons of diffusion of JMPs are difficult to obtain and for all intents and purposes may be questionable. However, by using a common approach in methodology this review has attempted to overcome such comparisons.

Given the cultural differences as well as differences in economic structure and enterprise management, it is difficult to come to an agreement on a set of identical conclusions. However, it has been confirmed that the economies which are trying to pursue rapid economic growth are seriously engaged in aligning their management practices with Japanese systems and techniques.